ZAMBIA

Chama Area Development

(611-0204)

APR 24 1981

ACTION MEMORANDUM FOR THE ASSISTANT ADMINISTRATOR FOR AFRICA (ACTING)

FROM: AAA/AFR/DR, ~~John W. Koehring~~ J W Koehring

SUBJECT: Project Authorization

Problem: Your approval is required for an Operational Program Grant (OPG) of $1,187,554 from the Section 531, Economic Support Fund (ESF) appropriation, to AFRICARE, a registered private voluntary organization (PVO), to assist the Government of the Republic of Zambia (GRZ) in increasing the production and incomes of small rice farmers through the Chama Area Development (Rice Production) project (611-0204). It is planned that a total of $535,000 will be obligated in FY 1981.

Discussion: Zambia, because of its rich natural resources endowment, has the potential to become one of Africa's major food producers. In recent years, however, Zambia has been a net importer of food which has aggravated the country's balance of payments problems. AFRICARE, in cooperation with Zambia's Ministry of Agriculture and Water Development (MAWD), proposes to assist the GRZ in increasing the productivity and incomes of small rice farmers in the Chama District of Zambia's Eastern Province.

Chama is one of the few districts in Zambia with an established tradition of rice cultivation. However, success has been uneven because of the lack of available resources required in the district. AFRICARE, at the request of the GRZ, developed this project to respond to the needs of the 600 small rice farmers and their families, as well as the 5,000 people who reside in Chama District. AFRICARE's experience with rice cultivation and with providing assistance to developing countries in other technical areas has been gained over the past 12 years.

The AFRICARE proposal is consistent with the GRZ's Third National Development Plan (1979-1983), which gives priority to agricultural production and the improvement of rural living conditions. The proposal is also supportive of AID/Zambia's strategy, which focuses specifically on

increasing food production and incomes of small farmers in Zambia.

In order to accomplish the objectives of this proposal, a total of $535,000 is being requested for obligation in FY 1981. The life-of-project funding is $1,187,554, which will be expended over a three and one-half year period. The following table illustrates the areas in which funds will be required:

	Year 1	Year 2	Year 3	Year 4	Total
Personnel	$72,725	$80,348	$84,347	$44,990	$282,410
Travel	52,400	23,470	54,391	30,152	160,413
Equipment	151,195	-0-	-0-	-0-	151,195
Supplies	91,959	11,500	8,970	4,242	116,671
Training	4,300	3,580	3,888	-0-	11,768
Construction	285,548	-0-	-0-	-0-	285,548
Other Costs	68,673	37,654	47,816	25,406	179,549
Total	$726,800*	$156,552	$199,412	$104,790	$1,187,554

The GRZ will contribute the equivalent of $375,000 or 24 percent of the total project costs. This contribution will cover salaries of the GRZ provincial agricultural staff, fuel for GRZ vehicles, costs of operating and maintaining GRZ road construction equipment, and costs of soil surveys and research performed by GRZ agricultural specialists.

It has been concluded from the analysis in the proposal that:

1) the project approach is technically and economically sound and socially acceptable;

2) the technical design and cost estimates are reasonable, and adequately planned, thereby satisfying the requirements of Section 611(a) of the Foreign Assistance Act of 1961, as amended;

3) the timing and funding of project activities are appropriately scheduled;

4) sufficient planning has been done for the implementation, monitoring and evaluation of project progress, and

*Even though AFRICARE's budget reflects the need for $726,000 in year 1, only $535,000 is presently available for obligation.

5) all statutory criteria have been satisfied.

The Initial Environmental Examination, which can be found in Annex A of the proposal, has been reviewed, and a negative determination has been made by the Africa Bureau Environmental Officer. It was agreed that the IEE must be modified if pesticides are added in the project, and that roads to be constructed under the project will be designed in accordance with the design criteria and standards developed and approved by A.I.D. in the handbook of October, 1980 entitled "Environmental Design Considerations for Rural Development Projects."

There is one condiditon precedent which must be met, which requires that:

-- Prior to any disbursement for the construction of certain technician housing, AFRICARE will show AID that suitable sites have been identified and allocated, and furnish to AID the plans, specifications, cost estimates and time schedules for carrying out such construction activities.

There are two covenants. One requires that AFRICARE will utilize the AID Handbook entitled "Environmental Design Considerations for Rural Development Projects" for the design and construction of feeder roads. The second covenant will require AFRICARE to agree to satisfy AID pesticide procedures prior to utilizing any pesticide in connection with the project.

The following waivers and approvals are required:

-- Source and origin waiver from A.I.D. Geographic Code 941 to Code 935, and a waiver to permit the proprietary procurement of 3 John Deere tractors and spare parts which have an approximate cost of $73,500.

Pursuant to the blanket waiver authority granted by A/AID to AA/AFR on February 3, 1981, approval for the procurement of two four-wheel right-hand drive project vehicles (landrovers) which have an approximate cost of $35,000.

The justifications for the waivers can be found in Annex C of the proposals.

The Project Review meeting was held on February 20, 1981; there were no unresolved issues. A Congressional

Notification was submitted on February 25, 1981. AFR/SA, during the waiting period, responded to several questions raised by a staff member of the House Foreign Affairs Committee. The questions were prompted by a GAO Audit Report on AFRICARE dated October 14, 1980. AFR/SA responded to all of the questions raised, and the 15-day waiting period expired March 13, 1981 without any further inquiries. (See Attachment 1).

AFRICARE will implement the project through its representative in Zambia, in co-operation with the GRZ's provicial agriculture office in the Chama District of Zambia. AFRICARE will also provide an agricultural engineer who will serve as the project manager. AFRICARE will submit semi-annual progress reports, and an evaluation of the project, jointly conducted by AID, AFRICARE and GRZ representatives, will be held at the end of the first year of the project. The responsible A.I.D. officer in the field will be Ernest Gibson and the AID/W backstop officer will be Alfred Harding, AFR/DR/SAP.

There are presently no significant human rights issues in Zambia.

Recommendation: That you sign the attached Project Authorization, thereby authorizing the Grant and the requested waivers.

Attachments:

1. Memorandum of Conversation
2. Project Authorization
3. AFRICARE Proposal

Clearances

DAA/AFR(Acting):RStacy	RAS	Date 4/20
AAA/AFR/DP:RStacy	RAS	Date 4/20
AFR/SA:MDagata		Date 4/20
AFR/DR:NCohen	(TWK for)	Date 4/14/81
AFR/DR/ARD:WJudy	Draft	Date 4/10/81
AFR/DR/ENGR:ATummarello	Draft	Date 4/13/81
AFR/DR/SDP:BBoyd	Draft	Date 4/9/81
AFR/DR/SA:WWolff	(TWK for)	Date 4/14/81
GC/AFR:TBor		Date 4/17/81
COM/ALI:WGill	Draft	Date 4/10/81
AFR/SA:LPompa	Draft	Date 4/10/81

AFR/DR/SA:AHarding:rcj:4/2/81

PROJECT AUTHORIZATION

Name of Country/Entity: AFRICARE (Zambia)

Name of Project: Chama Area Development

Number of Project: 611-0204

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a grant to AFRICARE, a registered private voluntary organization, for the Chama Area Development Project-Zambia, involving planned obligations of not to exceed $1,187,554 in grant funds over a three and one-half year period from the date of authorization, subject to the availability of funds in accordance with the AID OYB/allotment process, to help in financing foreign exchange and local currency costs for the project.

2. The project will assist the Government of the Republic of Zambia to increase the production and incomes of small rice farmers in Chama District by financing the costs of improving extension services, introducing appropriate mechanization, promoting seed purification and multiplication and providing necessary infrastructure, including feeder roads and staff housing.

3. The Grant Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

4.a. Source and Origin of Goods and Services

Goods and services financed by A.I.D. under the project shall have their source and origin as specified in A.I.D. Handbook 1, Supplement B, Chapter 16B1c and A.I.D. Handbook 13, Chapter 4, in the Cooperating Country.

b. Waivers

(1) Notwithstanding paragraph a, above, the requirement set forth in Handbook 1B, Chapter 5, that commodities procured with grant funds have their source and

origin in the U.S., is waived, based upon the justification set forth in Annex C of the Project Proposal to permit the procurement of three tractors and spare parts at a cost of $73,500, which have as their source and origin countries included in AID Geographic Code 935. It is hereby determined that exclusion of procurement of the tractors from free world countries other than those included in Code 941 would seriously impede attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

(2) In accordance with the blanket waiver granted by the A/AID on February 3, 1981, two four-wheel drive, right hand drive project vehicles which have an approximate cost of $35,000, and have as their source and origin countries included in AID Geographic Code 935.

(3) Based upon the justification set forth in Annex C of the project proposal, proprietary procurement of three John Deere tractors is hereby authorized.

c. Condition Precedent

Prior to the disbursement, or the issuance of any commitment documents for the construction of technician housing, the Grantee will furnish in form and substance satisfactory to A.I.D.,

(1) evidence that sites have been identified and allocated;

(2) plans, specifications and cost estimates; and

(3) a time schedule for construction.

d. Covenants

AFRICARE shall covenant;

(1) To ensure that the AID Handbook entitled "Environmental Design Considerations for Rural Development Projects" is utilized for the design and construction of feeder roads; and

(2) to ensure that AID pesticide procedures have been satisfied prior to the use of any pesticide in connection with the project.

4/24/81
Date

W. Haven North *
W. Haven North
Assistant Administrator
for Africa (Acting)

* The accompanying grant will also ensure that this will a provision for regular semi-annual financial and economic viability of project as it progresses

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AFRICARE

"Improving the quality of life in rural Africa through the development of water resources, increased food production and the delivery of health services."

1601 Connecticut Avenue, N.W. Washington, D.C. 20009
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CHAMA RICE PRODUCTION

ZAMBIA

Submitted To:

U.S. Agency for International Development
December, 1980

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A. Project Purpose and Description

In cooperation with Zambia's Ministry of Agriculture and Water Development, Africare is proposing to spend $1,106,160 to increase rice production among small farmers in Chama District as part of the nation's quest for self-sufficiency in staple grains. The project, designed to begin in March 1981 and extend three and a half years, will directly benefit at least 600 peasant farmers and reduce the amount of rice Zambia must import to meet national demand.

The project will support improved extension, introduce appropriate mechanization, promote seed purification and multiplications, and provide necessary infrastructure, such as feeder roads and staff housing. At completion of the project in mid-1984, participating farmers should be capable annually of raising nearly three and one half times as much rice as they would be producing had there been no external assistance. Their income will have quintupled, after allowing for contributions toward operation and replacement of major farm equipment. Rice extension services will have been strengthened in Chama District. Finally, the additional rice produced over the course of the program will have earned a net saving of $350,000 in foreign exchange.

B. Project Background

Zambia is potentially one of Africa's major food producers but is yet consistently unable to meet its own needs. The Third National Development Plan (1979-83) givesabsolute priority to agriculture and to rural needs generally. President Kenneth D. Kaunda underscored the TNDP's thrust in mid-1980 when he announced a concerted 10-year Operation Food Production.

Zambia currently produces about 18% of domestic rice demand. In 1979, it imported 7,442 tons at a cost of $2,867,800 (See Table I below.) The TNDP projects national self-sufficiency in rice by 1983. Although this goal appears unattainable, the Ministry is committed to increasing rice production significantly and asked Africare, in late 1979, to investigate the potential for expansion in remote Chama District, which straddles the Luangwa Valley at the northern extremity of Eastern Province. The Ministry selected Chama because it has a long rice-growing tradition, offers exceptional scope for expanded production and because this district's development is lagging behind most of the country.

Following an initial survey of the existing scale of rice production in Chama, the Ministry proposed in March 1980 that Africare focus on three areas--Chifunda, Simulemba and Kapilingizya--where rice farmers are concentrated and where there is ample land accessible for expansion. The Ministry specifically requested Africare to develop a program in those areas to improve extension services, seed quality, marketing and credit, and to increase per hectare yields, farmer incomes, and the number of farmers raising rice.

Table I
Zambia's Rice Imports Since 1975

Year	Tons	Cost in US Dollars	Cost Per Ton
1975	3,918	1,456,000	371.62
1976	7,494	2,119,000	282.76
1977	8,508	2,427,100	285.27
1978	3,758	1,474,200	392.28
1979	7,442	2,867,900	385.35

Source: Planning Unit, Ministry of Agriculture and Water Development

Africare's representative in Zambia and its agricultural production specialist spent two person/months during four visits, between March and October, working closely with Ministry field staff. In addition to assessing the current agricultural practices and infrastructure in the district, they met with rice farmers, provincial and district political leaders, local officials, chiefs and headmen. As the project took shape, it was reviewed at several administrative, political and technical levels before it was endorsed, as required, by the Provincial and District Development Committees. The proposal finally was discussed in substance with more than 150 rice farmers in the three project areas, who accepted it in principal. To a very real extent, therefore, this proposal reflects a broad consensual understanding of the projects' ends and means, from the Ministry to the rice growers, embracing all relevant political and administrative figures.

Chama is one of the few districts in Zambia with an established tradition of rice cultivation. Beginning in the early 1970s, the Ministry has been introducing rice in other promising regions, such as the Chambeshi flood plain in Northern Province and in Luapula Province, where extension workers are sent for training in rice. Success has been uneven. Progress in the short term has often been compromised later by lack of sustained extension, especially among farmers newly-introduced to rice. The Ministry is concentrating now on encouraging increased rice production where the crop is well known, where local varieties have adapted to the environment, and where there are good soils for expansion.

Africare's experience with rice has been gained largely over the past five years in an integrated rural development program at Tara in the Republic of Niger. Several hundred families have been settled near the banks of the

Niger River, which they use to irrigate rice and other crops. The purpose of this project is to increase the productive capacity of farmers at Tara through an integrated approach which combines broad based village level management with intensive irrigated agriculture. The overall purpose was to be accomplished through a number of activities, namely dike construction, construction of internal works (canals and pumping system), adult literacy programs, cooperative organization, health programs, farm-to-market road construction, socio-economic studies, rural artisans workshop, animal traction, and poultry production.

The project will modernize food production in the river valley area at Tara through a combination of intensive cultivation on irrigated soils and improved farming systems on the surrounding lands, as well as through support for other village activities, such as livestock raising and fishing.

Three features were prominent in the formation of this project. The first was the concept that it should be executed by Nigerians and their institutions with foreign assistance being oriented toward the reinforcement of these institutions and their capacity to implement the project. The second feature was founded on the understanding that the project, in order to sustain itself, could not address itself simply to the problems of agricultural production. An integrated approach to development would be required which would take into consideration all aspects of rural life, including such things as improved research, transportation, health, and education facilities. The third feature embraced village participation in not only the food production, but in the organization and management of the project. This latter feature is of primary importance as it stresses the need for motivational organizational, educational and training aspects as over-riding elements of the implementation plan.

The construction portions of the project (dike, installation of the pumping system, canals, and drainage system) are completed. The third crop of rice (two crops per year) has been harvested on about 100 has. The average yield is about 4 tons/has/harvest.

C. Project Analysis

1. Economic Benefits

The project has two prime economic objectives: to increase production of rice and to increase small farmer incomes. Indirectly, it also seeks to encourage socio-economic development in Chama District.

Zambia produces less than a fifth of the rice it consumes. Although overshadowed in the Zambian diet by maize, it is an important food in several sections of the country and particularly in urban areas. As part of its plan to achieve self-sufficiency in all staple grains, the government is pledged to reducing the enormous and costly shortfall in rice by the mid-1980s. Table II projects likely increases in production and farmer incomes during the three harvests which will be directly affected by the program. Levels achieved in 1984 should be sustainable in subsequent years.

Table II's estimates are conservative, based on minimal anticipated increases in cultivated hectarage, yields, the number of farmers enrolled, and the official price for the crop. They indicate that, in terms of added farmer income alone, the project cost can be "returned" by the 1987 harvest, allowing for income reserved for replacing the original farm equipment provided. If net foreign exchange savings are included, the project will "pay" by 1985.

The average rice farmer in the three project areas presently cultivates about half a hectare and produces about eight 80-kilogram bags per year.

He retains slightly more than half (4.36) for his family's consumption. The farmer generally has no fertilizer, seed, labor or land preparation costs, and therefore no loans to repay. The four-to-five bags that he or she sells earn between $95 and $119 at the official price paid by the Eastern Province Cooperative Marketing Union, the sole legal buying agent. The farmer may receive somewhat more if he sells a portion of his crop on the informal market.

During the project period, the average participating farmer is expected to double his hectarage and nearly double his yields. Assuming a modest annual $1.32 (K1.00) increase in the official per-bag buying price, by 1984 he should be producing about 22.5 bags and earning $526 on sales. Minus his contribution toward mechanization costs, his income will be $440.00 or five times his income from rice in 1980. Net income and net foreign exchange savings will more than cover the projects's per-farmer investment of about $1,700 by the 1985 harvest.

The income projected in Table II also should generate considerable economic activity in Chama District. (See Appendix for a Sunday "Times of Zambia" feature article of July 20, 1980, which discusses Chama's development plight.) As the government improves road access from the district headquarters to two major areas of the district, this will provide incentive to small businesses, especially those stocking essential commodities, to establish in or near the rice-growing villages. (There is virtually no commercial activity at present outside the district's administrative center.) There will be new resources to support self-help projects, such as wells,

*The Ministry is not committed to specific or regular price increases, but agrees in principle to the need to provide farmers with reasonable incentive to increase production.

Table II

Projected Rice Production and Farmer Income, 1980-1990

	(Actual)	Project Harvests									982-90
	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	Total
Total production (80 kg bags)	3,960	4,000	5,500	10,925	13,500	13,500	13,500	13,500	13,500	13,500	13,500	110,925
Bags sold	1,818	1,830	3,102	8,309	10,884	10,884	10,884	10,884	10,884	10,884	10,884	87,599
Hectares cultivated	247	250	275	437	450	450	450	450	450	450	450	
Bags per hectare	16	16	20	25	30	30	30	30	30	30	30	
Participating farmers	491	500	550	600	600	600	600	600	600	600	600	
Official price (₦) per bag	23.76	25.08	26.40	27.72	29.04	30.36	31.68	33.00	34.32	35.64	36.96	
Income from sales (₦) (with project inputs)			81,893	230,326	316,071	330,438	344,805	359,172	373,539	387,906	402,273	2,826,423
Income from sales (₦) (without project inputs)	43,196	45,896	47,995	50,395	52,794	55,195	57,594	59,994	62,394	64,794	67,193	518,348
Gross earnings margin produced by project			33,898	179,931	263,277	275,243	287,211	299,178	311,145	323,112	335,080	2,308,075

Note: Total hectarage now cultivated in the three rice growing areas under consideration has been estimated by local agricultural extension staff at 202 hectares. Based on discussions with farmers and agricultural staff, Africare believes current per hectare yield averages 16 bags. Taking total production for 1980 as a more reliable figure and dividing it by 16 gives the estimated current hectarage used in Table II. Farmer and staff estimates of land area often appeared confused and contradictory during project field visits. The terms "hectare" and "acre" were frequently used interchangeably.

school classrooms and clinics.* Young people will have greater reason to take up farming; and urban migrants, faced with the mounting hardships of city life, may be more inclined to return home to the land.

2. Technological Considerations

It is feasible, without mechanization, to increase current rice yields in Chama. For instance, farmers can--and will--be shown, how to plant and weed in rows, using simple hand machines; seed varieties now in use will be systematically purified after years of gradual decline; and one or more high-yielding varieties will be introduced. These relatively simple steps can double current yields. They cannot, however, help farmers take advantage of nearby, unused dambo soils which are especially suitable for rice. Hoe cultivation of the hard-baked fields is hard work and limits most farmers to preparing little more than a half hectare during the hot weeks of September and early October, prior to the onset of the rains. The typical farmer is capable, however, of planting, weeding and harvesting as much as one hectare or more if he has access to tractor plowing. (Tse-tse infestation precludes use of draft oxen.) It is proposed under this program to provide that access. By gradually expanding areas under cultivation--up to an average of three quarters of a hectare per farmer--the farmers can make fuller use of improved seeds and methods of cultivation without a corresponding increase in labor; and farmers not now growing rice can be more readily introduced to the crop by eliminating its most toilsome aspect--hoeing.

In judging whether mechanization is appropriate for the project, two questions were addressed: Can the dambo (riverrain) soils sustain deep plowing? And can the farmers, with supervision, learn to manage a tractor, plow, harrow and accessory equipment, as well as generate savings from income to replace them?

*Africare plans to raise private funds to support self-help projects in the rice-growing and other areas of Chama District.

Soil surveys of the three project areas indicate that tractor plowing can be done safely in the dambos under consideration. (The soil survey reports and maps will be submitted separately.) Tractors used on damp or wet peats risk compacting the soils, and plowing too deeply can disturb underlying sandy soils and raise them to the surface. However, tractors can be used safely on the heavier clays found in the damboos cultivated in Chama, especially since they dry out thoroughly by the time land preparation begins in September. (It is worth noting, as well, that the damboos in question are enriched every year by the runoff of good soils from the Zambia-Malawi watershed to the east.)

Operation of the mechanization units (one for each of the three areas) will be supervised by a rice management committee appointed by the Provincial Agricultural Officer. It will be headed by the District Agricultural Officer in Chama and include the District Rice Extension Coordinator, an agricultural engineer assigned by Africare, and other relevant officials. The committee will oversee the three farmer management committees to be responsible in their respective areas for operation and maintenance of the mechanization units. The central rice management committee will appoint tractor drivers and mechanics who will be trained first at the Ministry of Agriculture's Mt. Makulu Research Station near Lusaka and later, in the field, by Africare's agricultural engineer. It will also be responsible for collecting from participating farmers payment in kind (from their annual rice crops) to cover the costs of operation, maintenance and eventual replacement of the tractor units. These funds will be administered on behalf of the individual farmer management committees. The latter will be responsible for allocating plowing time and other uses of the equipment consistently with the purposes of the program and with the advice of the rice management committee and field

extension officers. Table III illustrates the percentage of anticipated farmer income which will be required to offset operating and replacement costs.

Table III

Net Farmer Incomes After Mechanization Costs
(Based on 5-year depreciation of tractor units)

	1981-82	1982-83	1983-84	1984-85	1985-86
Tractor replacement	5,000	20,000	30,000	42,500	42,500
Operation/maintenance	16,800	19,320	22,218	25,550	29,383
Sub-total	21,800	39,320	52,218	68,050	71,883
Gross farmer income	81,893	230,326	316,071	330,438	344,805
Net farmer income	60,093	191,006	263,853	262,388	272,922

Note: Annual 15% inflation is assumed for costs of fuel and tractors. At this rate, three new tractors would cost $147,834. Interest earned on the accumulating replacement fund will reduce amount farmers must save collectively to about $140,000. Farmer incomes above are taken from Table II.

It is expected that the farmer management committees can fulfill their responsibilities with adequate supervision. One or more members of each committee may be sent for courses in elementary bookkeeping at the Department of Marketing and Cooperatives training school in Katete. The committees, however, will not be established as cooperatives, although it is possible that one or more might evolve in this direction.

To complement mechanization, the Ministry of Agriculture plans to introduce simple hand-operated weeders and planters, similar to those tested a few years ago in Luapula Province. Swedish-made models are being introduced this season at the Katangalika and Nganjo rice schemes which began in Chama in 1979 as part of the Ministry's Integrated Rural Development Program (IRDP) for Eastern Province. These or locally-modified planters and weeders will

be made available to participating farmers for purchase in kind.

Based on experience in Luapula Province in the early 1970s, use of the planters and weeders should increase yields by up to 50%. Row planting, as opposed to the traditional broadcast method, reduces the weeding workload, promotes more timely and thoroughly weeding, and results therefore in better yields. Sowing also becomes more efficient!

Key to the effective application of these innovations is improving the quality and accessibility of the extension staff serving the farmers. The Ministry's original proposal to Africare stressed improved extension and recommended assignment of a district rice extension coordinator, rice-trained agricultural assistants to be stationed in the three project areas (to work solely with rice farmers) and three commodity demonstrators to assist them. The Ministry already has assigned the coordinator* and three qualified agricultural assistants who have undergone specialized rice training in Luapula Province.

Given the remote location of these assignments, it will be necessary to construct staff housing for the three agricultural assistants and three commodity demonstrators who will be working at the village level. In addition, two senior staff houses will be built at the Farmer Training Center in Chama to accommodate the coordinator and the Africare agricultural engineer. The provision of adequate housing and supervisory and technical support, in the persons of the rice coordinator and agricultural engineer, should go far toward sustaining the morale of the extension workers. The ability of the coordinator and the agricultural engineer to reach the field workers

*The rice extension coordinator is Mr. G.S. Ndhlovu, former district agricultural officer in Chama (1973-78), who has been intimately involved in development of this project.

throughout the year and to give close supervision will be improved through construction and upgrading of feeder roads to the rice-growing areas, which are now cut off, as long as eight months in a year. (The third area, Kapilingizya, is near the district headquarters and less affected.)

Among the chief responsibilities of the extension workers will be the development of seed multiplication (purification) plots. One such demonstration plot will be maintained at each agricultural camp. In addition, the agricultural assistant and his commodity demonstrator will recruit sufficient numbers of seed-rice farmers to insure adequate supplies of seed to expand cultivation. (Although there is at present no premium offered for seed rice, the Ministry accepts the need for such an incentive and will consider establishing a premium effective for the 1981-82 growing season.)

The rice coordinator, meanwhile, will be certified by the Ministry of Agriculture as a seed inspector. Annual testing and treatment of the local seed crop will be conducted in Chama. This will avoid disruptions caused now by having to send seeds to Msekera Research Station 200 miles away in Chipata.

Farmers in the three rice-growing areas have a detailed knowledge of the characteristics of several varieties of rice which have been adapted to local conditions over the past 20 or 30 years. These include Faya, Senga, Ndeke, Burma and Tanganyika. The Ministry also has introduced Sindano in Kantangalika and Nganjo. Yields of up to 46 bags per hectare were recorded in 1980 at Katangalika. Through seed multiplication and testing over the course of the program, existing strains--which have been degraded over the years--will be revitalized and their yields increased; and Sindano, and possibly other new varieties, will be tested against local

conditions and farmer preference. (Many farmers grow one or two varieties for home consumption and another for sale.)

Africare's agricultural engineer will provide necessary technical support. He will field-train the tractor drivers/mechanics in the handling and maintenance of their units; work with extension personnel to insure that plowing and harrowing are done properly; adapt hand planters and weeders, if necessary, and instruct extension staff and farmers in their use; advise the farmer management committees; assist in the implementation of environmentally-sound land use practices; aid the Chama Rural Council in the design and construction of small bridges and other works along feeder roads; and encourage development of self-help projects, such as wells, in the rice-growing communities.

3. Socio-cultural Factors

Chama District has been locally-administered only since 1977, when it was officially divorced from Lundazi District to the south. It is very much a Cinderella region, accurately and graphically depicted by the Sunday Times of Zambia article referred to earlier. Although the reportage accentuates the negative, the positive side to Chama District is the evident commitment of the people to self-development. In meetings with the rice farmers of Chifunda, Simulemba and Kapilingizya, Africare and the Ministry of Agriculture staff detected neither suspicion nor cynicism toward the promise of assistance. In discussing how to increase rice production, the farmers raised basic questions. They left the distinct impression that "we're ready when you are."

Judging by their noticeable participation in meetings to discuss the project, women will be active in the project, particularly in the two areas

of greatest potential--Simulemba and Kapilingizya. Many women work their own rice plots. Like their husbands, they contribute half of their crop to the family granary and sell the remainder for their own needs. Where one finishes his or her field work first, he or she usually assists the other. Women will benefit from the program to the extent that more efficient, less tiresome cultivation methods allow them either to increase the amount of rice they produce (and therefore their personal income) or to devote the time and energy saved to other activities.

It is difficult to anticipate specific impacts on the quality of life, physical or otherwise, in the project areas. The people appear able to satisfy basic dietary needs. This past July, with harvesting completed following a relatively parched and poor growing season, storage bins were well stocked with rice, maize, groundnuts, sunflower and millet. However, Chama District as a whole is a net importer of food. Poor roads hinder distribution of foodstuffs to sections where harvests have been especially meager. Moreover, district health officials note a rising incidence of malnutrition among children. Although this may reflect more accurate reporting, rather than a worsening food supply situation, it is reasonable to assume that increased rice production will have a generally positive effect on the nutritional status of many residents of the district. It will certainly assure greater supplies of rice on the informal bush market for sale to those villages in need.

The income generated is bound to spur greater cash-based activity in a region that is on the far periphery of the national economy. This is likely to translate into the opening of a few rural shops, road transport,

and seasonal agricultural employment. The availability of essential goods is apt to make rural life more attractive, discourage a few young men and women from migrating to the cities, and encourage others to return from urban employment (or unemployment).

4. Broader Project Implications

The project is to function in an integrated context, both in terms of its relationship to other Ministry of Agriculture initiatives in Chama District and to other government departments represented in Chama, principally Health and Community Development.

With the assistance of the Swedish government, the Ministry of Agriculture has established an Integrated Rural Development Program to support a variety of projects throughout Eastern Province. These include crop production, animal husbandry, housing, vocational training, roads and water supplies. In Chama, the IRDP has concentrated on developing two rice schemes, Katangalika and Nganjo, each located about 30 kilometers from the district headquarters. The projects are Zambian-staffed and supported by the IRDP office in Chipata.

Africare has discussed with Ministry and IRDP officials the need to coordinate development of the latter's two rice projects and the three to be initiated under this proposal. Because the approaches are essentially the same, and because the Provincial Agricultural Officer agrees that a single senior extension officer should coordinate rice development in Chama, no administrative disharmony is expected. The Africare-assisted projects will be funded--and accounted for--separately, and all personnel assigned to them by the Ministry will work exclusively in those sectors. Where the Africare agricultural engineer can assist the other rice projects, without

compromising his responsibilities in Chifunda, Simulemba and Kapilingizya, he will do so.

Together, the five rice areas include the most promising in the district for developing the crop. Other areas of potential are more remote, have less land available for expansion and/or less concentrated settlement of existing rice farmers and potential recruits. Nevertheless, should the basic extension methods work under the Africare and IRDP projects, the Ministry expects in time to apply them as widely as possible in the district.

Indeed, the Ministry hopes to reaffirm that a crop-specific extension effort can produce significant harvest increases, as it has with cotton elsewhere in Zambia. Given the government's recent commitment to large-scale state farming, it is notable that the Ministry of Agriculture is prepared to devote scarce personnel and funds to supporting small farmer production.

Within Chama District alone, the impact of the project is apt to radiate beyond the production of greater quantities of rice. Agricultural development can be the keystone to more comprehensive social and economic progress. Africare hopes, through the presence of its agricultural engineer and periodic visits by its resident representative, to encourage complementary projects--especially in water supply and primary health care. These projects will be funded from Africare's private resources. In discussing the rice program with the District Development Committee and the popularly-elected Rural Council, Africare has had a very positive reception to this suggestion. The Ministry of Health has informally encouraged Africare to work with the provincial and district health authorities in developing a pilot primary health care project. Preliminary discussions already have been held at the district level.

5. Project Institutionalization

The Ministry of Agriculture is committed to this program. Indeed, it is the Ministry that conceived the program's basic purpose and framework. Africare has served mainly as a catalyst and technical resource in the planning process. It is Ministry personnel, however, who have been responsible at every level for following through on all action necessary for the project to be developed properly: soil surveys, assignment of extension personnel, provision of scarce vehicles, liaison with other government departments, and gathering of baseline data on rice farming in Chama District.

The most concrete indication of the Ministry's support is the allocation of seven personnel, including the rice extension coordinator and three other experienced extension workers. In addition to other Ministry staff assigned to rice projects under the IRDP, these men represent an extraordinary commitment of manpower.

Whether the Ministry chooses over the long term to maintain this presence in Chama, solely for the benefit of rice farmers, will depend in large part on the degree of production derived from the program.

The project as a whole should be self-sustaining by its formal end-date of mid-1984. The following capabilities are expected in Chama by that time:

-A permanent cadre of rice extension workers will be based in the district, although not all will necessarily spend all of their time in the three core project areas.

-The rice extension coordinator will continue in his role. The rice management committee also will continue to function, providing the three respective farmer management groups with administrative and technical support.

-The farmer management groups will be competent to operate, maintain, and replace the tractor units. Major repairs and overhauls of the tractors will be done at the government's Mechanical Services Branch in Chama and/or by John Deere service personnel based in Chipata with AFE Ltd.

-The farmer groups will have saved about 40% of the estimated replacement cost of the tractors, which are expected to last at least five years. With considerably greater incomes projected in 1985 and 1986, the balance will accrue in those years.

-The roads leading from Chama town itself to Simulemba and Chifunda and from Chama to Kapilingizya will be passable year round. The Chama Rural Council will maintain these stretches, as well as the two short feeder roads it will have constructed. (See below.)

D. Project Design and Implementation

1. Implementation Plan

The Ministry of Agriculture and Water Development will be responsible for conduct of the project. The line of authority, in practice, will begin with the Deputy Director of Agriculture (Extension). Day-to-day supervision will rest with the Provincial Agricultural Officer in Chipata and his staff. Chief among these will be the rice extension coordinator, the district agricultural officer in Chama, and the provincial crop husbandry officer.

Africare will provide logistical and material support, including 4-wheel drive vehicles for the rice coordinator and the agricultural engineer, the tractors and allied farm equipment, and spare parts.

The agricultural engineer will be based in Chama for the duration of the project. Because the assignment will be in a remote area and involve working with villagers, the engineer will devote his first two months in Chama exclusively to language training with a local tutor. He is expected to achieve a working knowledge of either ChiNyanja, ChiTumbuka or ChiSenga before he takes up project tasks.

The Africare representative in Lusaka will maintain close liaison with the Ministry and with officials in the field. He will monitor the project, prepare the annual evaluation, receive project commodities and transfer them

to the government, to the Ministry, and verify all expenditures.

The implementation plan assumes that funding will be available by March of 1981. Upon funding and execution of a project agreement with the Government of Zambia, Africare will immediately order tractors (probably John Deere), farm equipment, spares, and Caterpillar grader parts in the United States for shipment to Zambia. These should arrive in country by July--in time for the agricultural engineer (having completed his language training) to begin working with members of the farm management groups selected to operate and service the mechanization units. These men will have recently attended the tractor drivers' training course at Mt. Makulu near Lusaka.

USAID will be asked for a waiver to permit purchase in Botswana, Zimbabwe or Malawi of two 4-wheel-drive vehicles (probably Landrovers) Waivers will be necessary because both vehicles will be required as soon as the project starts and because of existing maintenance capabilities in Chama and Eastern Province generally. Also, a waiver will be required to enable the purchase of U.S. source and origin equipment by brand name for the John Deere and Caterpillar heavy equipment items based on availability of servicing and spare parts outlets.

Construction of five units of staff housing, including those for the rice coordinator and agricultural engineer at district headquarters, will be tendered in January and contracts granted when funding is assured. (It is possible that the Ministry's provincial building team will construct one or more of the houses.) The uncertain supply of building materials, the limited construction season and the remoteness of some of the sites will probably delay completion of all housing until 1982. Priority will be given to houses for the three agricultural assistants working directly with the rice farmers and the two senior staff houses in Chama. The

latter (standard Government of Zambia Type 321) will be sited at the Farmer Training Center. Those for the agricultural assistants (Type 203) will be sited at the Ministry's agricultural camps at or near the three project areas. Pole-and-dagga houses for the three commodity demonstrators will be built on self-help. Blueprints and cost estimates for Types 321 and 203 have been submitted to AID/Redso (Nairobi) for review.

Extension staff will move into their assigned areas no later than May, locate temporary housing, acquaint themselves with the rice farmers, begin organizing the local farm management committee and plan their seed multiplication and demonstration plots. Each will work closely during this initial period with the rice coordinator, the district agricultural officer, and the agricultural engineer. The latter will work with the tractor drivers in September and October, supervising the plowing and harrowing of land demarcated by the agricultural assistant and the farmer management committee, with the advice of the rice coordinator. Some of the farmers will have the opportunity to purchase hand planters and weeders, in kind, thru the rice management committee. The agricultural assistants will keep detailed records for all participating farmers and individual plots, noting seed varieties used, amount of seed and sowing methods, time of planting and weeding, any application of fertilizer, and other relevant data.

The agricultural engineer will spend as much time as possible during these early months in the rice areas, helping to organize construction of shelters for the farm equipment and harvested rice, supervising any needed minor agricultural works in the rice fields, advising road crews where necessary and familiarizing himself with the communities and their needs. At district headquarters, he will be responsible for organizing storage

and inventory of spare parts and establishing liaison with the Mechanical Services Branch.

All of these activities will be closely monitored by the rice management committee. The committee also will be responsible, through the district agricultural officer, for keeping the Chama Rural Council and the District Development Committee informed of progress and problems; and for maintaining constant liaison with other government departments and parastatal organizations which have direct or indirect interest in the rice program. These include the Eastern Province Cooperative Marketing Union, the National Agricultural Marketing Board, the Department of Community Development, the Department of Marketing and Cooperatives, and the Ministry of Health.

The Provincial Roads Department and the Chama Rural Council will share responsibility for upgrading and constructing the required feeder roads.

Lack of year-round communication links is a major constraint to development and an acutely-felt need of the people. In the context of this project, it will be difficult to supervise and support the agricultural extension staff and the farmer management groups without improved road access. The roads must also be improved to insure timely collection of marketed production and delivery of inputs, and promote secondary economic development.

The Provincial Roads Department plans in 1981-82, independently of this project, to improve the road south from the district center to Tembwe and to Chifunda by 1984. The work will encompass grading, building up of low-lying sections, and construction of culverts, small bridges, and paved fords across wider streams. Although ungraveled, the road will be passable to most vehicles except when heavy rains swell the streams for a few hours or a day or so.

The Chama Rural Council Works Department, using project funds, will upgrade an 18-kilometer feeder road from Chipamba to Simulemba and a shorter stretch from Kambombo to Kapilingizya (See red-dotted sections on the project map.). Based on a survey in October 1980, the provincial senior roads superintendent estimates the former will cost about 23,000 dollars, including about 14,500 dollars for two stone-reinforced concrete slabs and the balance for 23 culverts using locally-cast two and three-foot-diameter concrete pipes. An additional 12,000 dollars will be required to repair old culverts and construct new ones along the Kambombo-Kapilingizya road. The project will provide spare parts and fuel to insure that the rural council's caterpillar grader can be used on this work. Where possible, the PRD will lend heavy equipment as needed on a spot basis.

The Chipamba-Simulemba road will have priority, given that it is the most difficult to traverse. Until the PRD provides direct access, project staff and marketing vehicles can reach Chifunda, the least important of the three rice areas, via Lundazi during most of the year.

The Project Analysis section and Table II present the essential yardsticks of achievement. To the extent that the goals for rice production and small farmer incomes are met, the project can be judged successful.

In terms of infrastructure, about 25-30 kilometers of feeder road will have been upgraded, eight units of staff housing built, between six and nine tractor drivers and mechanics trained, and three farmer management groups established on a self-sustainable footing. In sum, a rice-specific extension system will have been firmly planted in Chama District.

Because the first crop directly influenced by the project will be harvested between May and July of 1982, the first evaluation will be conducted at that time. Africare will make quarterly progress and

financial reports to A.I.D. The second and third evaluations will coincide with the 1983 and 1984 harvests. Africare will assign an independent evaluator to assess the project, either in mid-1982 or mid-1983, depending on the level of progress achieved by early 1982. If unforeseen problems arise by that time, a consultant/evaluator or Africare's agricultural production specialist will be asked to recommend remedial action.

LOGICAL FRAMEWORK

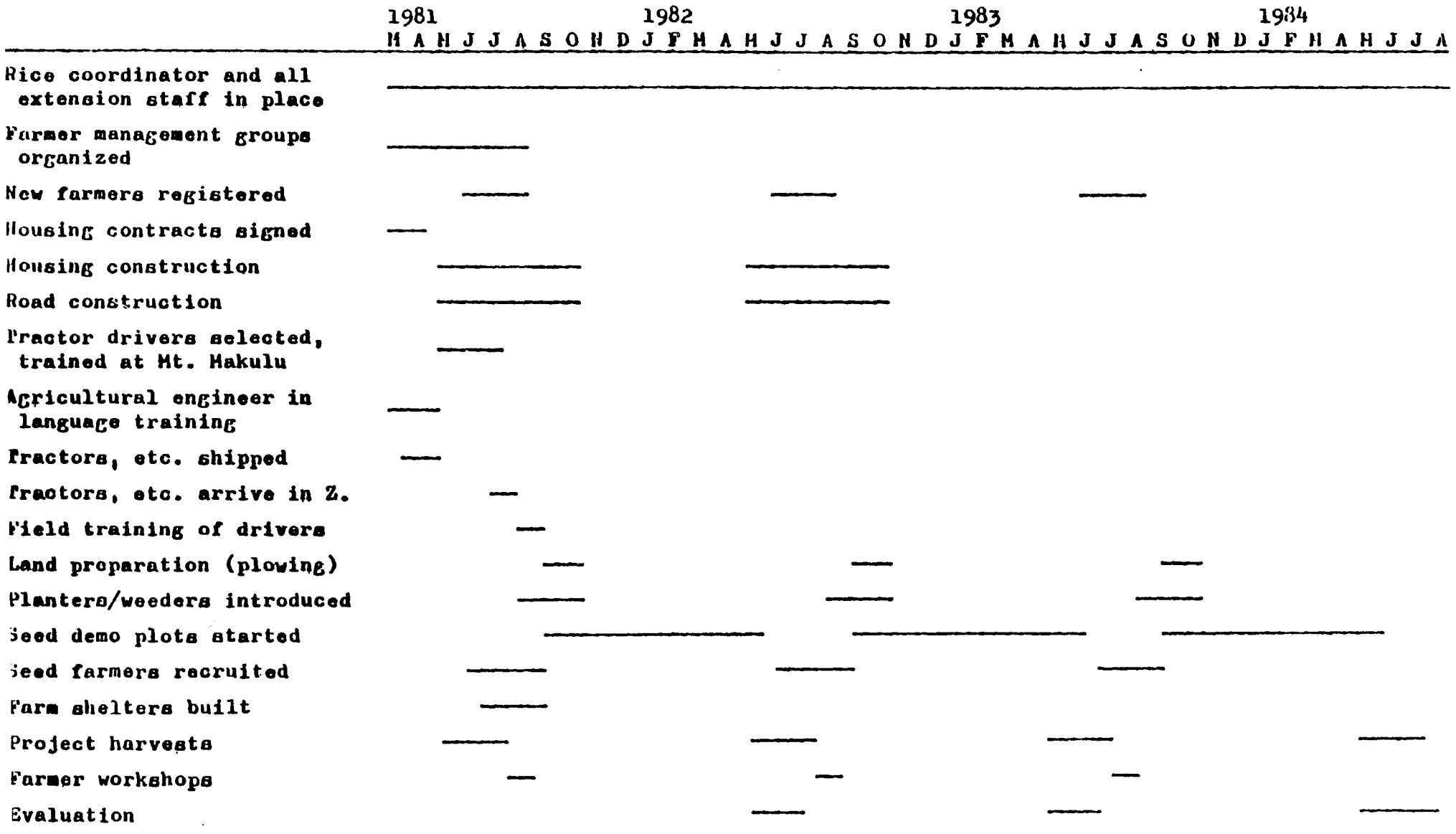
Narrative Summary	Objectively Verifiable Indic.	Means of Verification	Important Assumptions
Program Goal: To sustain ambitious drive for self-sufficiency in staple grains.	Production level of rice in project areas of Chama Dist. to reach approx. 1,100 tons by 1984 harvest, representing half national production in 1979.	National and district agric. production statistics.	Food production and self-sufficiency remain national priorities.
Project Purposes: To increase production of rice in the Chifunda, Simulemba and Kapili-mpinya areas of Chama District, and to increase small farmer incomes.	Rice marketed from project areas to reach 1,102 bags in 1982 and 10,884 bags by 1984. Income directly attributable to project inputs and resulting increases in average yields; average net farmer incomes to increase by a factor of about five.	Records kept by Chama District Agricultural Officer (DAO), including estimates by extension agents of "unofficial" sales; purchasing records of Eastern Province Cooperative Marketing Union (ECU).	Farmers will be able to expand areas under cultivation; annual rainfall will be adequate; constraints addressed below are resolved. Official buying price is increased annually by about $1.32 (K1.00).

Narrative Summary	Objectively Verifiable Indic.	Means of Verification	Important Assumptions
Outputs:			
Increased rice production, based on expanded hectarage and improved yields.	Hectarage in project areas to expand from 250 to at least 450 by 1984 harvest; average yield per hectare to increase from 16 80-kg bags to 30 bags	Reports of DAO and rice extension coordinator.	
Small farmer incomes increased.	Average net incomes per grower to increase from about $88 in 1980 to at least $ 440 by 1984.	DAO and NCU reports.	Official buying price maintains attractiveness to farmers.
Extension services and infrastructure for rice farmers improved.	Rice-specific extension staff assigned to each growing area (one agricultural assistant and commodity demonstrator in each); ongoing seed improvement and certification program firmly established; staff housing and feeder road construction completed.	Reports of DAO, provincial crop husbandry officer (seed) and Provincial Roads Department.	
Farmer management groups established on a self-sustaining basis.	Reports of DAO, rice extension coordinator, and Africare agricultural engineer show that groups have saved 40 percent of estimated replacement cost of tractors by 1984 harvest; that their internal administration is sound and that farmers are receiving adequate mechanization service and paying appropriate fees; that tractors and farm equipment have been properly maintained.	Records of the rice management committee, bank statements showing funds accruing in reserve, minutes of farmer management group meetings, maintenance records on tractors, log and receipt books for use and payment for equipment by group members.	
Roads into rice-growing areas improved to all-weather status. Feeder road construction from Chipamba to Simulemba by the Chama Rural Council; the Chama-Chifundu and Chama-Kapilinqizya Road improvements completed by the Provincial Roads Department	Approximately 25-30 kilometers of rural roads upgraded with culverts and paved fords (drifts); two feeder roads constructed by Chama Rural Council.	Records of the Provincial Commissioner of Works and the Chama Rural Council works department.	Both Provincial Roads Department and the Chama Rural Council have adequate heavy equipment available.

Narrative Summary	Objectively Verifiable Indic.	Means of Verification	Important Assumptions
Inputs(Africare)			
A. Technical Assistance in Agricultural Engineering	A. 1 Technician (42 person-months)	A. Project Records	
B. Agric/Road/Staff Equipment, Vehicles, & Spares	B. 3 tractors with accessories, spares, and operating costs; 2 four-wheel drive vehicles and operating costs; 6 bicycles; Handtools ($20,000); Topographical Equipment, Equipment rental ($1,000); Office supplies	B. Project records, visual observation.	b. Waiver requests to AID approved expeditiously; no change in current market availabilities.
C. Housing for Africare and host country staff, and storage sheds,	C. 3 type 203 houses (Host Country use); 1 type 321 house (Host Country use); 3 Pole & dagga houses (Host Country use); 4 storage sheds (Project use); 1 type 321 house (Africare use).	C. Project records, visual observation.	C. No change in current market availabilities; no change in current construction company availability.
D. Inputs for road construction	D. $35,000 in support to the Provincial Roads Dept. and the Chama Rural Council Works Dept.	D. Project records.	
E. Training	E. Language training Tractor drivers' training course Farmer workshops	E. Working knowledge of language and proficiency in use of tractors	
F. Other direct	F. Freight Insurance Office rentals and utilities.	F. Project records, visual observation	

Narrative Summary	Objectively Verifiable Indic.	Means of Verification	Important Assumptions
Inputs (Govt. of the Republic of Zambia)			
A. Technical & Support Staff	A. Zambian extension staff, including a rice coordinator three agricultural assistants (rice) and three commodity demonstrators.	A. Dept. of Agriculture records	A. Government of Zambia maintains stated commitment to project.
B. Road Construction	B. Grading, build-up of low-lying sections, and construction of culverts, small bridges, and paved fords across wider streams done by Provincial Roads Dept.	B. Reports from Provincial Roads Dept.	B.
C. Training	C. Tractor drivers' training course Farmer Workshops	C. Proficiency in use of tractors.	C.

Project Activity Time Line



	(Travel & Allowances, cont'd)	Year 1	Year 2	Year 3	Year 4	Total
535	Basic Furnishings for Overseas Staff	$ 6,000	$ -0-	$ 1,000	$ -0-	$ 7,000
537	Incountry Transportation (includes gas)					
	Airfare	400	440	484	266	1,590
	Project Technician Fuel	9,600	10,560	11,616	6,389	38,165
		$10,000	$11,000	$12,100	6,655	$39,755
538	Incountry Subsistence/Per Diem ($90/day)	3,240	3,240	3,240	1,170	10,890
	SUB-TOTAL TRAVEL & ALLOWANCES	$ 52,400	$ 23,470	$ 54,391	$ 30,152	$ 160,413
3.	EQUIPMENT					
540	Office Equipment & Furniture	$ 2,000	$ -0-	$ -0-	$ -0-	$ 2,000
541	Equipment/Tools/Spare Parts I					
	3 Disc Plows	6,900	-0-	-0-	-0-	6,900
	3 Harrows	10,095	-0-	-0-	-0-	10,095
	3 Trailers	13,800	-0-	-0-	-0-	13,800
	3 Scrapers	9,000	-0-	-0-	-0-	9,000
	3 Tractors	73,500	-0-	-0-	-0-	73,500
		$113,295	-0-	-0-	-0-	$113,295
542	Equipment/Tools/Spare Parts II					
	6 Bicycles	900	-0-	-0-	-0-	900
545	Vehicles for Host Country Use					
	Rice Coordinator Landrover	17,500	-0-	-0-	-0-	17,500
546	Vehicles for Africare Use					
	Project Technician Landrover	17,500	-0-	-0-	-0-	17,500
	SUB-TOTAL EQUIPMENT	$ 151,195	-0-	-0-	-0-	$ 151,195

E. Financial Section

CHAMA RICE PRODUCTION - FOUR-YEAR BUDGET

		Year 1	Year 2	Year 3	Year 4	Total
1. PERSONNEL & FRINGE BENEFITS						
501	Salaries - U.S. Hire Staff (3½ years)					
	Agricultural Engineer (full-time)	$ 29,000	$ 31,900	$ 35,090	$ 19,300	$ 115,290
	Resident Representative (half-time)	15,000	16,500	15,000	8,250	54,750
	Program Manager (half-time)	10,000	11,000	12,100	6,655	39,755
		$ 54,000	$ 59,400	$ 62,190	$ 34,205	$ 209,795
502	Salaries - Host Country Hire Staff					
	Administrative Assistant (3½ years)	5,000	5,500	6,050	3,328	19,878
506	Consultant Fees ($150/day)	-0-	2,550	2,550	-0-	5,100
508	Recruitment Costs	2,000	-0-	-0-	-0-	2,000
	Sub-Total Personnel	$ 61,000	$ 67,450	$ 70,790	$ 37,533	$ 236,773
510	Fringe Benefits - U.S. Hire (20%)	$ 10,800	$ 11,880	$ 12,438	$ 6,841	$ 41,959
511	Fringe Benefits - Host Country Hire (18.5%)	925	1,018	1,119	616	3,678
		$ 11,725	$ 12,898	$ 13,557	$ 7,457	$ 45,637
	SUB-TOTAL PERSONNEL & FRINGE	$ 72,725	80,348	$ 84,347	$ 44,990	$ 282,410
2. TRAVEL & ALLOWANCES						
521	Domestic Subsistence & Per Diem	900	$ -0-	$ 726	$ -0-	$ 1,626
530	Predeparture & Settling In Costs	1,500	-0-	615	-0-	2,115
531	International Travel (except relocation)	2,000	2,200	4,880	-0-	9,080
532	International Subsistence/Per Diem ($90/day)	1,260	1,530	2,790	-0-	5,580
533	Travel/Freight/Storage for Relocation					
	International Air Fare	4,500	-0-	8,470	4,000	16,970
	Freight/Storage	18,000	-0-	14,520	15,000	47,520
		$22,500	-0-	$22,990	19,000	$64,490
534	Employee Housing Rental	5,000	5,500	6,050	3,327	19,877

		Year 1	Year 2	Year 3	Year 4	Total
5. CONSTRUCTION						
570	Building Construction					
	3 Type 203 Houses @ $ 30,500	$ 91,500	$ -0-	$ -0-	$ -0-	$ 91,500
	2 Type 321 Houses @ $ 68,534	137,068	-0-	-0-	-0-	137,068
	3 Pole and Daffa Houses @ $660	1,980	-0-	-0-	-0-	1,980
	4 Storage Sheds @ $5,000	20,000	-0-	-0-	-0-	20,000
		$ 250,548	-0-	-0-	-0-	$250,548
571	Road Construction	35,000	-0-	-0-	-0-	35,000
	SUB-TOTAL CONSTRUCTION	$ 285,548	-0-	-0-	-0-	$ $285,548
6. OTHER DIRECT COSTS						
583	Freight (excluding relocation)	$ 10,325	$ -0-	$ -0-	$ -0-	$ 10,325
585	Insurance other than Personnel Related	2,000	2,200	2,420	1,331	7,951
588	Office Rent, Utilities, Maintenance	2,400	2,640	2,904	1,597	9,541
594	Telephone, Telegraph, Telex	2,000	2,200	2,420	1,331	7,951
	SUB-TOTAL OTHER DIRECT	$ 16,725	$ 7,040	$ 7,744	$ 4,259	$ 35,768
	Subtotal Personnel, Travel, Training & Direct Costs	$ 146,150	$ 114,438	$ 150,370	$ 79,401	$ 490,359
	Subtotal Equipment/Supplies/Construction	$ 528,702	$ 11,500	8,970	4,242	553,414
598	Indirect (Personnel/Trav/Train/Other) 26.5%	38,730	30,326	39,848	21,041	129,945
599	Indirect (Equip/Supplies/Construct) 2.5%	13,218	288	224	106	13,836
	TOTAL BUDGET	$ 726,800	$ 156,552	$ 199,412	$ 104,790	$ 1,187,554

		Year 1	Year 2	Year 3	Year 4	Total
3. SUPPLIES						
547	Repair/Serv HC Equipment & Vehicles					
	Landrover	$ 3,000	$ 3,300	$ 3,630	$ 1,996	$ 11,926
	Tractor Operation & Maintenance	16,800	-0-	-0-	-0-	16,800
	Grader Operation	3,000	3,300	-0-	-0-	6,300
		$22,800	$6,600	$3,630	$1,996	$35,026
548	Repair/Serv of Africare Equip & Vehicles					
	Landrover	3,000	3,300	3,630	1,996	11,926
549	Equipment Rental	1,000	-0-	-0-	-0-	1,000
550	Office Supplies	500	500	500	250	1,750
551	Project Supplies I					
	Demonstration Plots	1,000	1,100	1,210	-0-	3,310
	Handtools	20,000	-0-	-0-	-0-	20,000
	Surveying Instruments	1,000	-0-	-0-	-0-	1,000
		$22,000	$1,100	$1,210	-0-	$24,310
552	Project Supplies II					
	Spare Parts for Tractors/Landrover	22,659	-0-	-0-	-0-	22,659
	Grader Spares	20,000	-0-	-0-	-0-	20,000
		$42,659	-0-	-0-	-0-	$42,659
	SUB-TOTAL SUPPLIES	$ 91,959	$ 11,500	$ 8,970	$ 4,242	$ 116,671
4. TRAINING						
560	Africare Staff Training (includes Lang)	$ 1,000	-0-	-0-	-0-	$ 1,000
562	Allow's/Travel, Farmer's Trng & Wkshps	1,000	1,100	1,210	-0-	3,310
568	Subscriptions & Reference Publications	500	500	500	-0-	1,500
569	Teaching & Training Materials (extension)	1,800	1,980	2,178	-0-	5,958
	SUB-TOTAL TRAINING	$ 4,300	$ 3,580	$ 3,888	-0-	$ 11,768

ANNEX A

AFRICARE

"Improving the quality of life in rural Africa through the development of water resources, increased food production and the delivery of health services."

1601 Connecticut Avenue, N.W. Washington, D.C. 20009
Telephone (202) 462-3614

February 11, 1981

Mr. Alfred Harding
Project Officer
Department of State
Room 2884
Agency for International Development
Washington, D.C. 20523

Dear Mr. Harding:

Please find enclosed a narrative of the Initial Environmental Examination Statement as well as the Zambian Government's official request to Africare for assistance with the Chama Rice Project. Attached to the request is a typed transcript of the text.

The following information is provided in response to questions that were posed during our conference on 2/5/81.

The population of the proposed project areas is approximately 5,000 people.

In addition to directly enhancing the income and well being of the rice farmers, it is reasonable to assume that increased rice production will have a generally positive effect on the nutritional status of many (if not all) residents of the district. It will certainly ensure greater supplies of rice on the informal local market for sale to those villages in need.

Generated income should spur greater cash-based activity in the Chama region, which is on the far periphery of the national economy. This will most likely translate into the opening of a few rural shops, road transport, and seasonal agricultural employment. The availability of essential goods is apt to make rural life more attractive and discourage some young people (men & women) from migrating to the cities, as well as encourage others to return from urban employment (or unemployment).

It is expected that the impact of the project will radiate beyond the production of greater quantities of rice. Agricultural development in Chama can be the keystone to more comprehensive social and economic progress. Africare hopes to encourage complementary projects (especially in water supply and primary health care) through the presence of its agricultural engineer and periodic

visits by its resident representative. These additional projects will be funded from Africare's private resources.

The most concrete indication of the Zambia government's ability and commitment to provide support services to the people of Chama is the Ministry of Agriculture's allocation of seven personnel, including the rice extension coordinator and three other experienced extension workers. In addition to other Ministry staff assigned to rice projects under the IRDP, these men represent an extraordinary commitment of manpower.

Regarding the first-year evaluation of the project, it will be conducted jointly by Africare, AID, and the GOZ.

Finally, it is quite significant that the agricultural engineer receive training in the local language, in that the majority of farmers with whom he will be working do not speak English. Therefore, a working ability with the local language will be his only means of communicating with the people, generally.

Please contact us if any additional information is needed.

Sincerely,

C. Payne Lucas
Executive Director

EXAMINATION OF THE NATURE, SCOPE AND MAGNITUDE OF ENVIRONMENTAL IMPACT

I. Project Description

The Chama Rice Development Project aims to assist Zambia's drive for self-sufficiency in food production by increasing production of rice in the Chifunda, Simulemba and Kapilingizya areas of Chama District, and to increase small farmer income. The project will address its goals and purposes through the support of improved extension services and the introduction of appropriate mechanization, promotion of seed purification and multiplication, and the provision of necessary infrastructure, such as feeder roads and staff housing.

Chama is one of the ideal districts for growing rice in the Eastern Province. Many streams traverse the district, and when flooded in the summer, they provide ideal conditions for rice cultivation. The average rainfall is around 1000 mm annually; rainfall is between November and April. Soils are variable and all have not been surveyed. In general, however, the soil ranges from moderately well drained sands to peats, and seasonally, wet clay-loams with poor drainage.

There are 5 main areas in Chama District where rice is cultivated. A Swedish funded Integrated Rural Development Program (IRDP) is assisting with the management of 2 sites, namely Katangalika/Kambombo where there is about 500 hectares suitable for cultivation, and Nganjo/Tembwe where there is about 270 hectares available.

The Africare project will be involved with Kapilingizya/Kambombo, 140 hectares, Simulemba/Chikwa, 150 hectares, and Chifunda, 140 hectares.

In the proposed project area, the population is estimated to be about 5000. The district is tsetse fly infested and this therefore precludes the use of animal traction. The hand hoe is at present the major tool used in land preparation.

Activities under the proposed project include:

- increased rice production based on expansion of hectarage from 250 to about 450 hectares;
- the establishment of an active rice extension service serving the rice producers;
- the upgrading of 25-30 kilometers of rural roads with culverts and paved drifts, and the construction of feeder roads;

- the construction of five houses to be used by the extension service and the Africare staff; and

- the operation and maintenance of tractors and tractor drawn equipment.

II. Identification and Evaluation of Environmental Impacts

A. Land Use

1. Changing the character of the land through:

a. Increasing the population

Increased opportunities for work will be in effect only for the construction phase of the project, and the work will be accomplished by persons living in the area during two six-month periods during the project. Outside of this, most of the work will be with farmers already living in the area. The project is unlikely to accelerate population increase due to immigration but may, however, slightly reduce emigration through more promising farming opportunities. -Impact rating-none.

b. Extracting Natural Resources

The project will benefit from natural flows of runoff water from higher land, and from the natural flooding of land by rivers and tributaries, but this is unlikely to cause any perceptible downstream effect due to the small proportion of total watershed area which the 450 hectares represent, and the fact that there is already natural vegetation which retains and uses water on the land to be put under cultivation. -Impact rating-none.

c. Land Clearing

Construction of housing will involve only a minimal clearing or excavation of soil at the intended site, which already contains housing and facilities for a training center. The existing vegetal cover consists of weeds and brush, along with some grass. Road construction and improvements will be along existing tracks through relatively flat valleys, requiring a minimum of excavation. Borrow areas will be chosen so that removal of soil will not significantly impact the ecosystem, and likewise spoil areas will be so situated as not to destroy vegetation or significantly alter the character of the land on which soil removed from the road surface is discarded. Land clearing for rice cultivation will involve the removal of

existing grasses and brush, with the subsequent planting of rice, hence replacement of cover. Denuded slopes along road construction and improvement tracks will be replanted and stabilized as soon as possible.
-Impact rating-little to moderate negative.

d. Changing the Soil Character

Rice production activities under the project will be undertaken on valley soils which are either flat or very gently sloping, which are flooded due to both rainfall and the rising of streams and rivers. Whereas in most other areas of Zambia the clearing of vegetation and subsequent land treatment to raise crops renders the land particularly vulnerable to rainstorm erosion, this is not true with respect to the project area. The activity will be on flat lands which are liable to be enriched by deposits from the surrounding hillsides. Also, the valley soils are heavy clay soils and have a high resistance to erosion. Initial nutrient availability is sufficient for rice production, and the use of fertilizers under the project, along with improved weeding techniques to reduce competition by weeds, should result in improvement of soil character over present methods of rice production in the area.
-Impact rating-little to moderate positive.

2. Altering natural defenses: impact rating none.

3. Foreclosing important uses:

The land upon which the housing is to be constructed is already designated as a site for government facilities. Added land to be put under rice cultivation presently is not being used for farming, as existing cultivation techniques have limited the amount of land which farmers can put into production. Hunting is not allowed in the project area, as it is within the boundary of a game reserve, except during specific seasons when a limited number of tourist permits are issued. Otherwise, all wildlife except fish are fully protected. The placing of grassland under rice cultivation will not significantly alter the flood plain habitat of specialized riverine or flood plain species, due to the small proportion of the land to be involved relative to the entire protected area, and due to the negligible change in habitat. The small number of elephants, hippopotamuses and buffalos which come to the rivers in search of water during the dry season (non-production season) are expected to be unaffected.
-Impact rating-none.

4. Jeopardizing man or his works

Although the rice cultivation will be undertaken along the flood plains, flooding in the area is not severe and occurs gradually. Farmer housing is always located above the flood zone. Therefore, there is no potential for a man-made disaster.
-Impact rating-none.

5. Other Factors

The project will promote flood-plain agriculture, over the existing shifting, slash-burn (chitemene) agriculture being practiced by farmers in the area. The soils in the chitemene (higher) belt are heavily leached and mineral nutrients are tied up in the woods. The woods, therefore, are cut and burned as a method of transporting nutrients to the soil. The draining of nutrients by leaching and crop removal and sometimes increasing competition from weeds under chitemene agriculture causes the abandonment of cultivated plots after three to five years. To the extent that the project attracts farmers away from chitemene techniques, this would have a beneficial impact on the environment.
-Impact rating-little to moderate positive.

The design specifications for road improvements and construction will require that borrow areas be left in a state which will not accumulate water, and culverts will be placed to accomodate runoff from the road surface and surrounding areas in a manner which is complementary to natural runoff patterns. Paved fords and small bridges will be similarly designed and constructed.
-Impact rating-none.

B. Water Quality

1. Physical State of Water

Small demand for runoff and flood-plain water on flat valleys or very gentle slopes will not cause any increased sediment load beyond that currently being experienced with existing grasslands. As indicated earlier, denuded slopes along road sites will be replanted and stabilized as soon as possible, and the roads themselves will be located along existing tracks through relatively flat valleys. With this being the case, and since the total number of kilometers is very small, no change in the physical state of water is anticipated.
-Impact rating-none.

2. Changing the Chemical or Biological States of the Water

Use of fertilizer will be promoted under the project, however it is expected that the minor quanitites of fertilizer and small proportion of land on which they are to be used will result in no impact on the ground or surface waters of the area. The farming sites will be distinctly seperate and downhill from places where farmers live, and water for household consumption is normally taken from wells, thus no chemical contamination of drinking water is expected. It is presently expected that no pesticides will be used under the project, and any later proposal to introduce pesticides during the life of the project will be submitted to AID for its review, recommendations and approval.
-Impact rating-none.

3. Changing the Ecological Balance

Rice is presently being grown in the area, and is compatible with the ecosystem. The increase of hectarage from the existing 250 hectares to about 450 hectares is anticipated to have no negative impact on watershed, waterflow or related ecological patterns.
-Impact rating-none.

C. Atmospheric

1. Air Additives

No use of sprayed pesticides or herbicides is contemplated in this project, and any future proposed use during the life of the project will be submitted to AID for its review, recommendations and approval.
-Impact rating-none.

2. Air Pollution

The amount of exhaust gases generated by the construction and agricultural equipment will be insignificant. Possible reductions in upland slash/burn practices should slightly reduce this source of pollution.
-Impact rating-none.

3. Noise Pollution

The amount of noise generated by the construction and agricultural equipment will be insignificant, and will be generally away from dwellings.
-Impact rating-none.

D. Natural Resources

1. Diversion or Increased Use of Water

The project will benefit from the natural flow of runoff water from higher land, and from the natural flooding of land along river tributaries. The effect of the increased use of water by the rice crop will be minimal relative to the water use by existing grasslands, due to the abundant rainfall during the rainy season, and the downstream effect will be insignificant due to the small proportion of the total watershed area which the increase of 200 hectares represents. No water dams will be used.
-Impact rating-none to low negative.

2. Irreversible, Inefficient Commitments of Natural Resources

No such commitments of natural resources are being made, and no better alternative for development is forseen for the area.
-Impact rating-none.

E. Cultural

1. Altering or Destroying Important Physical Symbols of a Culture

No such actions are anticipated under the project.
-Impact rating-none.

2. Dilution of Cultural Traditions

Persons to be involved in the project are those already inhabiting the project area, and work will be undertaken in harmony with the existing leadership structure. Whereas some mechanization will be introduced, in the way of land plowing, the remainder of work on farm plots (planting, weeding, harvesting, etc.) will be accomplished by families and villagers through existing patterns of cooperation, hence traditional approaches to agriculture will not be significantly altered.
-Impact rating-none.

F. Socio-Economic

1. Changes in Economic/Employment Patterns

The project is anticipated to have a positive effect on the productivity of farm families in the area, but the opportunities for men and women are expected to increase in an equal manner relative to existing sharing of benefits. Many women work their own rice plots. Like their husbands, they contribute half of their crop to the family granary and sell the remainder for their own needs. Increases in production could therefore provide women as well as men with increased personal income, and more efficient, less tiresome cultivation methods could not only allow participants to increase the amount of rice they produce, but

also could allow them to devote any time and energy saved to other productive activities. Because the increased hectarage will be farmed by essentially the same persons now farming in the area, there is not expected to be an increase in work openings per se; the mechanization will enable the existing farmers to work more land. Some increases could be expected in the demand for commercial products as a result of the increased earnings to be derived in the area, and this should spur the market economy of the area somewhat. The need for improved roads is being addressed by the project itself, and the intended improvements to the road network will contribute to the economic growth of the area.
-Impact rating-moderate positive.

2. Changes in Population

This consideration has been partly addressed in Section A.1.a. of this IEE Statement. No significant increase or decrease of population is expected, and because the persons to be involved in rice production are already engaged in agriculture, any changes in the socioeconomic relationships as a result of land use and community services should be insignificant.
-Impact rating-none.

3. Changes in Cultural Patterns

As explained in Sections E.2. and F.1. above, improved rice farming will be accomplished through existing patterns of cooperation, and traditional approaches to agriculture (as differentiated from techniques) will not be significantly altered. Women should receive improved benefits as well as men, but within the present context of participation and benefit sharing; hence no changes in cultural patterns are anticipated of significant bearing on socioeconomic patterns in the project area. The crop to be planted, rice, is already a staple food of the area and part of the diet on a cultural basis.
-Impact rating-none.

G. Health

1. Altering or Destroying a Natural Environment

As indicated in Section B.2. above, no use of pesticides and insignificant effects of fertilizer should result in no negative effects to the natural environment. Likewise, since rice is already a crop under production in the area, and the increase in hectarage is relatively small and compatible to the environment, no negative effect of significance is anticipated.
-Impact rating-none.

2. Eliminating an Element of the Ecosystem

No actions are anticipated under the project which would eliminate an element of the ecosystem.
-Impact rating-none.

3. Other Factors

Schistosomiasis, malaria and sleeping sickness are endemic to the project area, and the farmers who will be participating in the project are for the most part people who are already being fully exposed to contaminated water and disease vector breeding sites. Although the number of farmers expected to participate will increase from approximately 500 to 600, with respect to flood-plain cultivation, the increase will consist of persons already living in the area, not persons resettled from another region. A certain amount of this increase would be likely to happen under existing efforts to increase rice production without project assistance.

The major consideration is that the project will increase the area of flood plain being worked by each farmer, through introduction of mechanized plowing and other elements of project support. Because the plowing will be done at a time when the farmers would not normally be in the water (i.e. it will be done at a time when the ground is dry), this will not reduce their contact with water. The farming operations which place the farmer in the water are principally weeding, and because each farmer will be weeding a larger area of land, the area of water which he or she will be in contact with will be greater. However, some benefits will be achieved due to improved planting and weeding practices (the rice will have been planted in rows, and weeding implements will be introduced which, though hand operated, will speed up the weeding operation). Overall, therefore, one cannot conclude that the increase in exposure to schistosomiasis will be directly proportionate to the increase in area being worked by the farmer. And, taking into consideration that most of the farmers are already fully exposed, the increased risk to them will most likely be little. Only so much of the working day can be, and is, spent working in water, and it is unlikely that this will be increased (and may in fact be slightly reduced) as a result of improved cultivation techniques.

The Government of Zambia is aware that working in rice paddies can result in bilharzia among the local population. At the Chama Hospital, one of the routine tests performed on people from the villages is one for the identification of schistosomiasis. This test will be continued. Also, the extension service and public health personnel work together on this problem and are prepared to work up a schistosomiasis control program if it becomes necessary.

As an additional element to the existing program, the project will include as part of its extension activities health education with respect to schistosomiasis. This program would be conducted under the supervision of the Rice Coordinator being provided by the Government of Zambia, and the Africare Agricultural Engineer, with support from the health department. Farmers will be informed on the nature of the disease, its mode of transmission, the tests which they can have done to determine if they have the disease or are a carrier, and the preventive measures which can help lessen the prevalence of the disease in the area. These measures together may help to lessen the prevalence of schistosomiasis among the participating population and, along with these health measures, contributions by the project in the way of increased food production and economic well being should have a positive effect on the health status of the individuals.

The district is tsetse-fly infested, and there are control points in and out of the area manned by personnel of the Ministry of Health where vehicles are sprayed and inspected for the transportation of flies. However, the project will not increase the exposure of individuals to tsetse-fly, nor will it increase the breeding habitat of the fly in the area. Therefore, no impact is expected with respect to this public health problem.

The planting of rice in flood-plains may only slightly increase the length of time which water is retained on the land, and hence only slightly increase the breeding habitat of the malaria vector. Malaria education will be included along the same lines as that for schistosomiasis under the project.

Overall impact rating-none to low positive.

H. General

1. International Impacts

Due to the small scale of this project, only low international impacts are foreseen, in the way of reduced rice imports and slight savings on foreign exchange.
-Impact rating-low positive.

2. Controversial Impacts

No controversial impacts are anticipated under the project.
-Impact rating-none.

3. Larger Program Impacts

The farmers engaged in rice production will learn new techniques and through the application of these will increase their production of rice and well being. The techniques can be used for other, larger projects, and the purification of seed rice on special production plots will contribute to an important need to preserve pure varieties for future usage.
-Impact rating-low positive.

4. Other Factors

No other factors are foreseen at this time.
-Impact rating-none.

III. Recommendation for Environmental Action

The preceding discussion has indicated that the effects of the project on the natural environment are expected to be small and, on the balance, positive. No potential negative effects are foreseen which would not be reversible. Therefore, neither an Environmental Assessment nor an Environmental Impact Statement is required. There will be an evaluation done after the first, second and third year of the project and these will include any possible negative effects on the environment.

Consequently, a negative determination is recommended for this project.

IMPACT IDENTIFICATION AND EVALUATION FORM

Chama Rice Production/Zambia

Impact Areas and Sub-areas 1/	Impact Identification and Evaluation 2/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population	N
b. Extracting natural resources	N
c. Land clearing	L to M negative
d. Changing soil character	L to M positive
2. Altering natural defenses	N
3. Foreclosing important uses	N
4. Jeopardizing man or his works	N
5. Other factors	
Possible reduction of slash/burn upland farming	L to M positive
Borrow areas for road construction	N
B. WATER QUALITY	
1. Physical state of water	N
2. Chemical and biological states	N
3. Ecological balance	N
4. Other factors	

1/ See Explanatory Notes for this form.

2/ Use the following symbols: N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

August 1976

IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

1. Air additives ---------- N
2. Air pollution ---------- N
3. Noise pollution ---------- N
4. Other factors

_____ _____

_____ _____

D. NATURAL RESOURCES

1. Diversion, altered use of water ---------- N to L negative
2. Irreversible, inefficient commitments ---------- N
3. Other factors

_____ _____

_____ _____

E. CULTURAL

1. Altering physical symbols ---------- N
2. Dilution of cultural traditions ---------- N
3. Other factors

_____ _____

_____ _____

F. SOCIOECONOMIC

1. Changes in economic/employment patterns ---------- M positive
2. Changes in population ---------- N
3. Changes in cultural patterns ---------- N
4. Other factors

_____ _____

_____ _____

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

1. Changing a natural environment	N
2. Eliminating an ecosystem element	N
3. Other factors	
Schistosomiasis/Sleeping Sickness/Malaria	N to L positive

H. GENERAL

1. International impacts	L positive
2. Controversial impacts	N
3. Larger program impacts	L positive
4. Other factors	

I. OTHER POSSIBLE IMPACTS (not listed above)

See attached Discussion of Impacts.

INITIAL ENVIRONMENTAL EXAMINATION

OR

CATEGORICAL EXCLUSION

Project Country: Zambia

Project Title and Number: Chama Area Development (Rice Production) (611-0204)

Funding: FY (s) 1981 - 84 $ 1,187,554

IEE/CE Prepared by: Robert E. Wilson/AFRICARE Date: 2/23/81

Environmental Action Recommended:

A negative determination is recommended for this project, with categorical exclusion for roads under Section 216.2(c)(2)(xv), because this activity involves the application of design criteria or standards developed and approved by A.I.D. in the Handbook of 10/80 "Environmental Design Considerations for Rural Development Projects", which includes the construction for feeder roads.

Action Requested by: John Patterson Date: April 2, 1981
AID Representative

Concurrence:
Bureau Environmental Officer

APPROVED [signature]

DISAPPROVED _____

DATE 4/23/81

Clearance: GC/AFR _____ Date _____

ANNEX B

Communications should be addressed to the Permanent Secretary

Telephone: LUSAKA 50433, 50612, 50559, 50458

Telegrams:

In reply please quote No.

REPUBLIC OF ZAMBIA

OFFICE OF THE PRESIDENT

NATIONAL COMMISSION FOR DEVELOPMENT PLANNING
NATIONALIST/MBITA RD
P.O. BOX 50268
LUSAKA

16th December, 1980

Mr. Kerin G. Lowther,
Resident Representative,
Africare,
P.O. Box 33921,
Lusaka.

Dear Sir,

RE: CHAMA PICE PROJECT IN EASTERN PROVINCE.

We have received a request from our Ministry of Agriculture and Water Development for financial support for the above project whose documentation has been prepared by your good offices.

On behalf of the said Ministry, we forward this request to you, for presentation to Africare, the contents of the request remaining the same.

Yours sincerely,

A. Kus[illegible]
for: DIRECTOR GENERAL
NATIONAL COMMISSION FOR DEVELOPMENT PLANNING

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Telephone: LUSAKA 51211, 50591
Telegrams:

MINISTRY OF AGRICULTURE AND WATER DEVELOPMENT

P.O. Box

(b) on Africare

Acting Permanent Secretary,
National Commission for Development Planning,
LUSAKA.

RECEIVED FEB 2 1981

Attention Mr. E.S. Musonda.

The above project was identified by [illegible] of [illegible] late in 1979 and initial steps were taken to prepare a [illegible] document for presentation to Africare [illegible] for [illegible] of funds. This was also at a time that [illegible] Dr. C.P. Lucas was in Zambia and His Excellency, the President [illegible] was elected Honorary Chairman of Africare [illegible] that it would be fitting if [illegible].

Africare have now completed the [illegible] of the project [illegible] which we are now studying. Unfortunately, as [illegible] over $4 million U.S. Dollars, it has become necessary for Africare [illegible] funds from USAID, which is one of the supporters of Africare.

This Ministry supports the Chama Rice Project. It has already been included in our Capital Estimates for 1981 where an allocation of [illegible] has been requested.

I will be grateful if a request can be made to USAID to support the application by Africare in respect of the Chama Rice Scheme. I am informed that this application is needed before the end of [illegible] to hit a certain deadline in the American administrative [illegible].

J. H. Hamba,
for/PERMANENT SECRETARY,
MINISTRY OF AGRICULTURE AND WATER DEVELOPMENT.

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c.c. Director,
Department of Agriculture,
LUSAKA.

The above project was identified by the Department of Agriculture late in 1979 and initial steps were taken to prepare a preliminary document for presentation to Africare which had indicated the availabilities of funds. This was also at a time when the Africare Executive Director Dr. C.P. Lucas was in Zambia and His Excellency the President Dr. Kaunda was elected Honorary Chairman of Africare. At this stage it was felt that it would be fitting if Zambia had an Africare funded project.

Africare have now completed the preparation of the project document which we are now studying. Unfortunately, as the cost of the project is over $1 million U.S. Dollar, it has become necessary for Africare to seek funds from USAID, which is one of the supporters of Africare.

This Ministry supports the Chama Rice Project. It has already been included in our Capital Estimates for 1981 where an allocation of K86,000 has been requested.

I will be grateful if a request can be made to USAID to support the application by Africare in respect of the Chama Rice Scheme. I am informed that this application is needed before the end of November, 1980 to bit a certain deadline in the American administrative procedure.

Government of Zambia Contribution

Item	Year 1	Year 2	Year 3	Year 4	Tota.
Salaries (agric staff)	39,949	43,944	48,338	26,586	158,81
Fuel	15,544	17,876	20,557	11,820	65,79
Road construction	59,400	59,400			118,80
Pre-project costs	1,908				1,90
Training	2,000				2,00
Soil surveys	1,000				1,00
TOTAL	119,801	121,220	68,895	38,406	348,32

ANNEX -C

WAIVER JUSTIFICATION

Problem: The Chama Area Development project will require the procurement of John Deere tractors and spare parts. AFRICARE, a registered private voluntary organization, has requested that AA/AFR, upon authorization of the project, also grant the following waivers:

1) A source/origin waiver from AID Geographic Code 000 (U.S. only) to Geographic Code 935 (Special Free World).

2) A proprietary procurement waiver.

Facts:

(a)	Cooperating Country:	Zambia
(b)	Project:	Chama Area Development (611-0204)
(c)	Nature of Funding:	OPG
(d)	source of Funding:	ESF
(e)	Description of Goods:	3 John Deere Tractors and spare parts
(f)	Approximate Value:	$73,500
(g)	Probable Source:	Zambia
(h)	Probable Origin:	United Kingdom or Republic of South Africa

Discussion

A. Source/Origin waiver

In accordance with AID Handbook 1B, procurement of commodities from Code 941 sources and of Code 935 origins under a grant-financed project requires a waiver. Under Handbook 1B, Chapter 5B4b(7), a waiver may be granted if there are "such other circumstances as are determined to be critical to the success of project objectives". AA/AFR has the authority to make such a determination and grant a waiver.

AFRICARE, under the Chama Area Development project, will utilize the requested tractors in their efforts to increase rice production in the rural areas of Chama District. It is expected that, as a result of the increases in rice production, the incomes of the small rice farmers in the district will also increase. The project requires tractors 1) which are familiar to the small rice farmers and GRZ provincial agricultural officials who will utilize them and 2) for which there are service outlets, spare parts and maintenance facilities readily accessible to Chama District, which is located in a remote part of Zambia's Eastern province. John Deere tractors have been requested because 1) they will be compatible with other tractors presently in use in Chama District, 2) there are John Deere sales, service, maintenance and spare parts facilities in Chama District and in other parts of Zambia and 3) the GRZ has standarized its tractors and other farm implements around the equipment manufactured by John Deere.

While John Deere tractors are manufactured in the U.S., the tractors procured under this project would be of Code 935 origin since they are manufactured in either the Republic of South Africa or the United Kingdom. They are not marketed in the United States and will, therefore be procured from a Code 941 source. Thus, the circumstances satisfy the criteria set forth above.

B. Proprietary Procurement Waiver

In AID projects, proprietary procurement requires a waiver of the normal requirement for using formal competitive bid procedures. Under Handbook 15, Chapter 3C4c, a waiver may be justified by the following factors: compatibility with equipment on hand and service availablity and dependability. Handbook 15, Chapter 3C4e(2) cites the appropriate Geogrpahic Bureau as the AID/W approval office for proprietary procurement for projects. It is also important to mention that the provincial agricultural office in the Eastern Province will be working collaboratively with AFRICARE during the implementation of this project, and the GRZ has standardized its tractors and other farm implements around John Deere. These tractors can be serviced by either GRZ mechanics, who are familiar with John Deere manufactured products, or by John Deere service and maintenance facilities located in Chama District and the Eastern Province of Zambia. These circumstances satisfy the factors set out above.

Conclusion: The waivers authorizing the procurement of 3 John Deere tractors, from a Code 941 source (Zambia) and from Code 935 origin (United Kingdom or the Republic of South Africa) are justified because:

1) John Deere is the only tractor manufacturer in Chama District with available servicing, maintenance, and spare parts facilities in the District and throughout Zambia.

2) The John Deere tractors sold, serviced, and maintained

in Zambia are manufactured in either the United Kingdom or the Republic of South Africa.

C. Vehicle Waiver

Pursuant to the blanket waiver authority granted by A/AID (Acting) to AA/AFR Acting on February 3, 1981, approval for the procurement of two four-wheel right-hand drive project vehicles (landrovers) which have an approximate cost of $35,000 is requested.

The justification for utilizing this waiver authority is as follows:

1) There are no American manufactured vehicles of the type and configuration required for use in this project (multipurpose landrovers), and

2) In addition, there are no facilities in Zambia for servicing and maintaining American manufactured vehicles or for purchasing spare parts as needed.

The source of these vehicles will be either Zambia, Malawi or Zimbabwe; the origin will be either Japan or the Republic of South Africa.

Recommendation: For the above reasons, it is recommended that AA/AFR:

1) approve a procurement source/origin waiver from AID Geographic Code 000 to Code 935 for procurement of two right-hand four-wheel drive vehicles and three tractors;

2) approve a proprietary procurement waiver authorizing the procurement of three John Deere tractors; and

3) cerify that exclusion of procurement from Free World countries other than the cooperating country and countries included in Code 941 would seriously impede the attainment of U.S. foreign policy objectives and the objectives of the foreign assistance program.

ANNEX D

CHAMA DISTRICT

CHIFUNDA RICE SCHEME

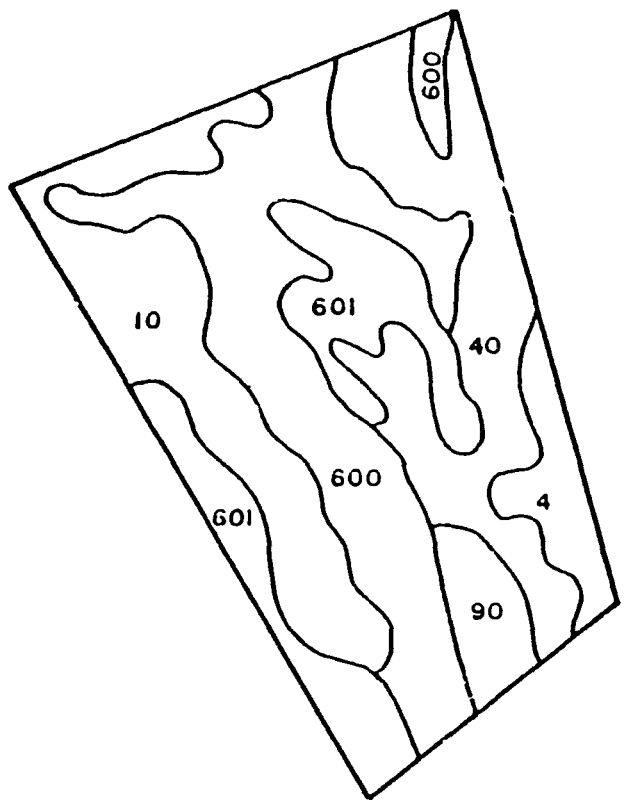
Detailed Soil Survey

SOILS

Approx. Scale 1: 30,000

600 0 600 1200 1800

Metres



SOIL LEGEND

40 Grant sandy clay loam: Deep moderately well drained very dark brown sandy clay with sandy clay loam soil.

4 Like 40 but gently sloping clayey soils

90 Kalinkhu loam sand. Deep excessively drained very dark brown medium and fine loam sand and sand.

600 Kombazi clay loam: Deep very poorly drained very dark gray to brown, cracking sandy clay loam with clay loam top soil.

601 Like 600 but has sand below 60 cm.

MAPPING LEGEND

Land capability boundary 40

Scheme boundary ..... ———

Surveyed and compiled by M. S. Phiri

Drawn by A. Luanja (Miss) 22/12/80

CHAMA DISTRICT

CHIFUNDA RICE SCHEME

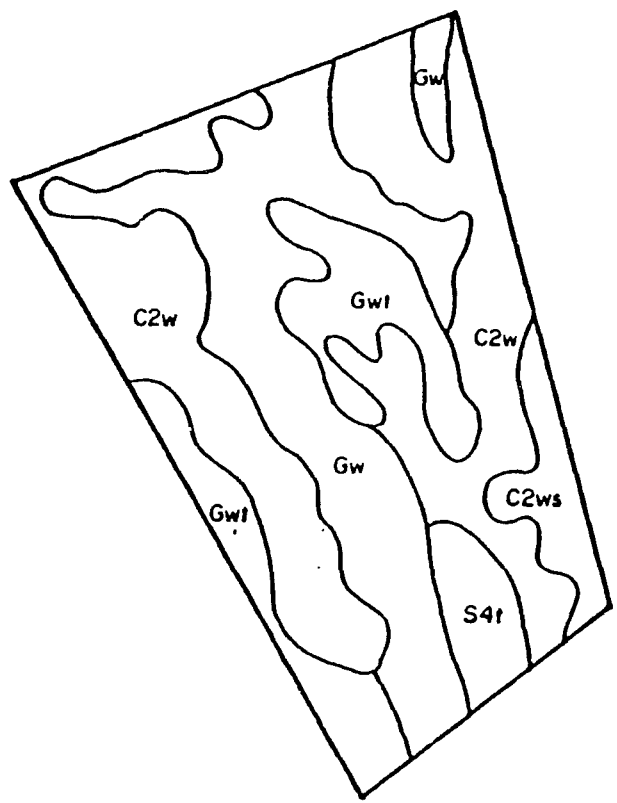
Detailed Soil Survey

LAND CAPABILITY CLASSES

Approx. Scale 1:30,000

600 0 600 1200 1800

Metres



LAND CAPABILITY LEGEND

ARABLE LAND

Moderately Good Arable Land

C2w Deep, moderately well drained clayey soils

C2ws Deep, moderately well drained and sloping clayey soils

MARGINAL ARABLE LAND

S4t Imperfectly drained sandy soils

GRAZING LAND

Gw Seasonally wet soils suitable for dry season grazing

Gwt Seasonally wet soils with texture limitations

MAPPING LEGEND

Land capability boundary C2w

Scheme boundary . . . . . .

Surveyed and compiled by M. S. Phiri

Drawn by M W Hlema 12/12/1980

CHAMA DISTRICT

SIMLEMBA RICE SCHEME

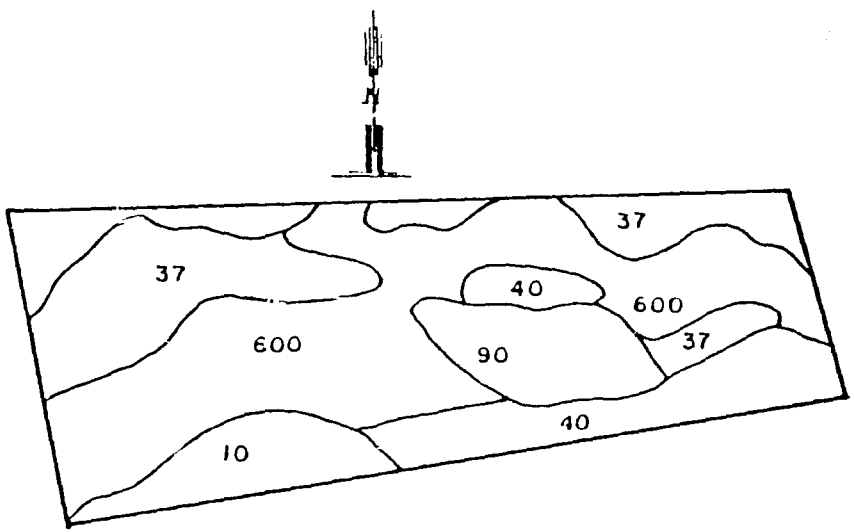
Detailed Soil Survey

SOILS

Approx Scale 1:30,000

600 0 600 1200 1800

Metres



SOIL LEGEND

40 Grant sandy clay loam: Deep moderately well drained very dark brown sandy clay with sandy clay loam soil.

37 Like 40 but has sand between 60-90 cm.

10 Like 30 but wetness starts from 60 cm downwards.

90 Kalinkhu loam sand. Deep excessively drained very dark brown medium and fine loam sand and sand.

600 Kombazi clay loam: Deep very poorly drained very dark gray to brown, cracking sandy clay loam with clay loam top soil

MAPPING LEGEND

Land capability boundary 600

Scheme boundary . . . . . .

Compiled and Surveyed by M. S. Phiri

Drawn by A. Luanja (Miss) 22/12/80

CHAMA DISTRICT

SIMLEMBA RICE SCHEME

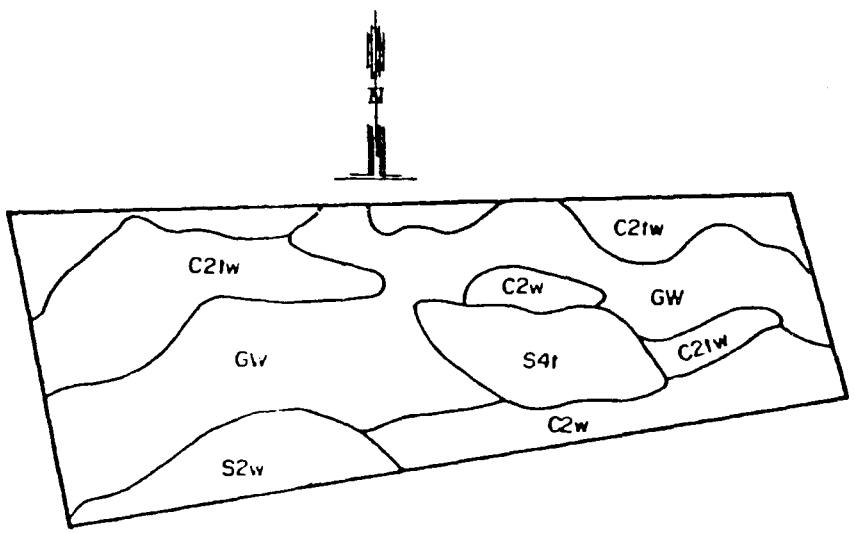
Detailed Soil Survey

LAND CAPABILITY CLASSES

Approx. Scale 1:30,000

600 0 600 1200 1800

Metres



LAND CAPABILITY LEGEND

ARABLE LAND

Moderately Good Arable Land

C2w Deep, moderately well drained clayey soils

C2tw Deep clayey soils; excessively drained in subsoil

S2w Deep, moderately well drained sandy soils

MARGINAL ARABLE LAND

S4t Imperfectly drained sandy soils

GRAZING LAND

GW Seasonally wet soils suitable for dry season grazing

MAPPING LEGEND

Land capability boundary GW

Scheme boundary

Compiled and Surveyed by M. S. Phiri

Drawn by M. W. Hlama 11/12/1980

CHAMA DISTRICT

KAPILINGIZYA RICE SCHEME

Detailed Soil Survey

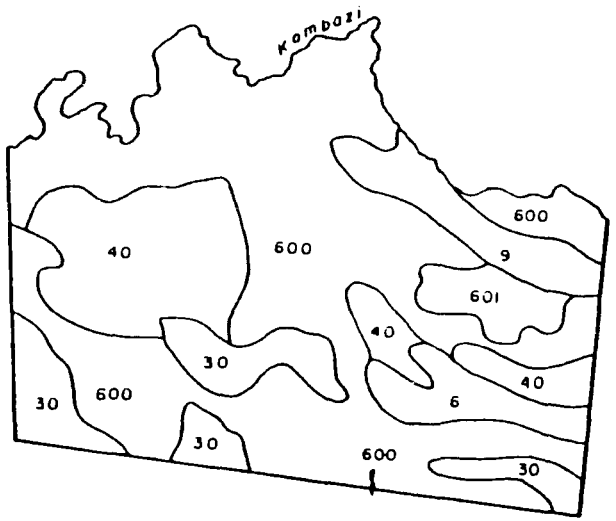
SOILS

Approx Scale 1 30,000

600 0 600 1200

Metres

N



SOIL LEGEND

30 Kachali sand loam: Deep well drained reddish brown sandy clay with sandy loam top soil

40 Grant sandy clay loam Deep moderately well drained very dark brown sandy clay with sandy clay loam soil.

6 Like 30 but sand starting from 60 cm down wards

9 Like 30 but has sand starting from 30cm down wards

600 Kombazi clay loam. Deep very poorly drained very dark gray to brown, cracking sandy clay loam top soil.

601 Like 600 but has sand below 60 cm.

MAPPING LEGEND

Land capability boundary . . 30

Watercourse . . .

Scheme boundary . . .

Surveyed and compiled by M. S. Phiri

Drawn by A Luanja(Miss) 22/12/80

CHAMA DISTRICT

KAPILINGIZYA RICE SCHEME

Detailed Soil Survey

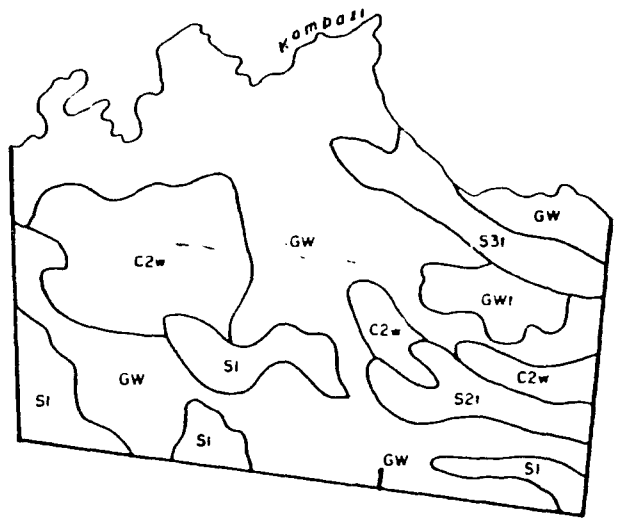
LAND CAPABILITY CLASSES

Approx Scale 1:30000

600 0 600 1200

Metres

N



MAPPING LEGEND

Land capability boundary S1

Watercourse

Scheme boundary

LAND CAPABILITY LEGEND

ARABLE LAND

Good Arable Land

S1 Deep, very gently sloping sandy soils

Moderately Good Arable Land

C2w Deep, moderately well drained clayey soils

S2f Deep, moderately well drained sandy soils

POOR ARABLE LAND

S3f Deep sandy soil, excessively drained in subsoil

GRAZING LAND

GW Seasonally wet soils

GWf Seasonally wet soils

Surveyed and compiled by M S Phiri

Drawn by M W Hlamo 12/12/1990

Department of Agriculture,
Msekera Research Station,
P.O. Box 89,
CHIPATA.

22sd October, 1980.

The Provincial Agriculture Officer,
P.O. Box 46,
C H I P A T A.

CHIFUNDA RICE SCHEME SOIL SURVEY.

The Chifunda Rice Scheme detailed soil survey covers an area of about 342 ha. The area lies 3 Km west of Chief's Headquarters in Luwelo River.

Preliminary findings are as follows (in hectares) :-

C 2 W.....	= 148.10 ha.
g t w.....	= 52.61 ha.
g w.....	= 105.24 ha.
C 2 Ws.....	= 18.51 ha.
S 4 t.....	= 17.54 ha.
Total.....	= 342.00 ha.

Most soils have wetness factor which allows the growing of rice crop.

For the definitions of the land capability classes and sub classes and the crop suitability capability be referred to the revised L.U.S. Planning Guide of 16th May, 1974.

It should be noted that these findings are of a provisional nature.

M.S. PHIRI.
SOIL SURVEY UNIT.
EASTERN PROVINCE.

The subclass is the second degree of generalisation. The soils in each class are subdivided into subclasses according to the dominant kind of limitations which is indicated by small case letters following the class letter.

Definitions of land capability classes S 2w, gw, C2tw and C 2w occuring in the survey area are given below.

ARABLE LAND:

Arable land is suitable for intensive use on a sustained economic basis. The farmer is free to choose annual or semi - perenial cultivated crops.

CLASS C 2 : MODERATELY GOOD ARABLE LAND (xxx.x ha).

Subclass C2w: Deep, Moderately well drained Clayey soils (23.13ha).

C2tw: Deep, Clayey, excessively drained in subsoil (61.96 ha).

S2w : Deep, moderately well drainedsandy soils (41.21 ha).

Land capable of being maintained at a high level of productivity under a moderately intensive cropping system. Moderate hazard of wetness and sandy textures down to 100 cm.

GRAZING LAND (135.6 ha).

gw Seasonally wet soils.

Land which is very poorly drained not suitable for sustained arable cropping but suitable for grazing due to severe permanent wetness.

CROP SUITABILITY RATINGS: See Kapilingizya Report.

PROPOSALS:

A proper bridge be constructedron Lumezi river and Limunga stream that it is peasable to and from Kapicila Senga School. Also this bridge will help work supervission during rain season.

2. Road to be upgraded from Nganjo Rice Scheme through Tembwe Head-Quarters and Kapicila Senga School for traffic.

3. As there is no Clinic nearby it is therefore proposed that a clinic be built at Kapicila Senga Upper School. Two Clinics are very far from the Scheme i.e. Chikwa Clinic is 32 Km from Simulemba and 30 Km at Tembwa Headquarters on Chama Chifunda Road.

4. It is proposed that an agricultural Head Quarters be at Kapicila Senga Upper School for school children education purposes.

RESULTS OF ptt ANALYSIS:

It was difficult for the writer to give the results of ptt analysis since the ptt meter was still in Mount Makulu for repair. Should results be sent from Mt. Makulu to Mariera Research Station, this will be included.

M.J. PHIRI.
S. A. A. SOILS.

JP/DCM.

Ministry of Agriculture and Water Development,
Department of Agriculture,
Msekera Research Station,
Soil Survey Unit,
P.O. Box 89,
CHIPATA.

23rd October, 1980.

The Provincial Agricultural Officer,
Department of Agriculture,
P.O. Box 46,
CHIPATA.

Attention: The Planning Officer.

SOIL SURVEY REPORT ON SIMULEMBA RICE SCHEME.

INTRODUCTION:

This is a report on the soil survey of the Simulemba Rice Scheme which lies North-West of Simulemba Village about .75 Km South of Chama Boma.

The survey work took place in September, 1980. During field work villagers gave great assistance.

The area is located in Eastern Province, Chama District in Chief Chikwa about 75 Km from Chama Boma due south and about 38 Km from Chief Chikwa Head Quarters due North-east.

GENERAL DESCRIPTION OF THE AREA:

Location: The Survey area is located in Eastern Province, Chama District about 75 Km due south along Chama - Chifunda Road to the East of KapiChilesenga School about 6 Km due south east. Its approximate location is 11°20's and 33° 5'E. It is bounded by Limunga stream to the East, to the South/North the beginning of Mopane trees and to the West is also along the Mopane trees from Chankhalemu Pool.

Geology and Climate:- Refer to Kapilingizya report.

RELIEF AND DRAINAGE:

The survey area drains into Limunga stream which drains its waters into Lumezi river. Topography is not as flat as the Kapilingizya Scheme. People in the village changed the stream flow so that the ridge is utilised for the growing of maize, sorghum, etc. The depression areas are utilised for the growing of Rice.

...../2.....

VEGETATION:

Vegetation where present consists of a woodland savannah includig the following tree species. Mopane SPP, Acacia SPP, Combretum SPP with grass species suchhas Echinochloa Pyramidalis, Andropogon encomus Cyrodon dactlon and Acroceremacrum.

ROADS AND COMMUNICATIONS.

The Simulembe Rice Scheme is linked by Chama - Chikwe Roads through Kapilila Senga School in both ways of rural Roads i.e. Chama - Chikwe via Tembwe Head Quarters and Chama - Chikwe Road branching off from Mwamalama School through Buli Zowole Shools up to Kapicila School. From Kapilicila Senga School is a road crossing Lumezi River to the village due South East about 6 Km. The Road link with Simulembe Village should have a proper bridge on Lumezi river and Limunga Stream just out side the village buildings of Simulembe. The Lumezi River becomes impassable for some months during rains.

SOILS.

The Preliminary finds of the Soils in the area are as follows :-

C 2 w	23.13 ha.
C 2 tw	61.96 ha.
gw	135.60 ha.
S 2 w	41.21 ha.
S 4 t	28.10 ha.
Total	290.00 ha.

SURVEY METHODS:

In the Office, prior to going to the field, aerial photographs and referrence material were collected. No maps at the scale 1:50,000 exist for the area but plans of ordering them from Lusaka to Chipata are already underway. The area is flown at a scale 1;30,000 Zambia Block A 1967. In the field all areas were readily reached by land Rover soil survey crossing the old Limunga stream several times. Traverses were made at 400 m by Land Rover and soil observation hand augering pits were made every 300 m. A total of three Soil profile pits were dug described and sampled.

INTERPRETATION OF THE SOILS FOR AGRICULTURAL USE:

The Land capability Classification.

Land capability classification is a method of grouping soils to show their relative agricultural potential for crops, grazing, etc. It is a practical grading for soils based upon their needs, limitations and response to management when used for crop production. The Land capability class in the broadest level of generalisation. The soils in each class have the same level of suitability for agriculture and approximately the same degree of limitations. The present classification is based mainly on soil textures between two broad groups of soils, the so-called clayey and sandy soils for the arable classes indicated C1, C2, C3 and S1, S2, S3, S4 respectively.

MAPPING UNIT 300 (36.12 ha).

Is similar to Unit 30 but sand is found from 60 - 90 cm. It is moderately too poorly suited to most crops. Rice is unsuited. Land capability Unit S 2t.

INTERPRETATION OF THE SOILS FOR AGRICULTURAL USE:

The Land Capability Classification.

Land capability classification is a method of grouping soils to show their relative agricultural potential for crops, grazing, etc. It is a practical grouping of soils based upon their needs, limitations and response to management when used for crop production. The land capability class is the broadest level of generalization. The soils in each class have the same level of suitability for agriculture and approximately the same degree of limitations. The present classification is based mainly on soil texture between two broad groups of soils, the so called clayey and Sandy soils for the arable classes indicated C1, C2, C3, and S1, S2, S3 respectively. The subclass is the second degree of generalisation. The soils in each class are subdivided into subclasses according to the dominant kind of limitations which is indicated by small case letters following the class letter.

Definitions of land capability classes S1, C2w, C 3t, C2t and Gw occuring in the survey area are given below.

ARABLE LAND.

Arable land is suitable for intensive use on a sustained economic basis. The farmer is free to choose annual or semi- perenial cultivated crops.

CLASS S1; Good arable land (42.81 ha) No limitations.

Classes C 2 and S 2 ; MODERATELY GOOD ARABLE LAND (88.73 ha).

Subclass C2w; Deep, moderately well drained clayey Soils (52.61 ha).

S2t: Deep moderately well drained sandy soils (36.12 ha).

Land capable of being maintained at a high level of productivity under a moderately intensive cropping system. Moderate hazard of wetness due to rising ground water table requiring special attention.

MARGINAL ARABLE LAND:

Do not support a long term intensive use of the land for arable crops without greatrisk of poor yields in dry or wet years, limited freedom for choice.

CLASS S3, POOR ARABLE LAND (45.00 ha.)

Subclass S 3t: Deep Sandy soil, excessively drained in subsoil (45.00ha).

Land which is difficult to maintain at even a moderate level of productivity due to sandy textures down to 100 cm.

GRAZING LAND (417.76 ha).

Subclass Gw: Seasonally wet soils (390.28 ha).

gwt: Seasonally wet soils (27.48 ha).

Land that is not suitable for sustained arable cropping but suitable for grazing due to severe permanent wetness.

PROPOSALS:

It is hoped that the bridge on Kalinkhu river be constructed and many other damba crossings from Chama Boma to Kapilingizya village. A bore hole at Kapilingizya village be repaired and a well be redeepened. It was quite hard to find the possible dam site.

SOIL ANALYSIS:

As the ptt meter is still at large, results from Mount Makulu were at hand the time of writting this report.

M.S. PHIRI.

MSP/DCM.

REPUBLIC OF ZAMBIA.

MINISTRY OF AGRICULTURE AND WATER DEVELOPMENT LAND USE BRANCH.

SOIL SURVEY REPORT

DETAILED SOIL SURVEY

MAPILINGIZYA RICE SCHEME

CHAMA DISTRICT.
EASTERN PROVINCE.

BY

M.S. PHIRI.
SOIL SURVEY UNIT
MSEKERA RESEARCH STATION.
CHIPATA.

22nd October, 1980 Issue.

SUMMARY AND RECOMMENDATIONS.

The Kapilingizga Rice Scheme detailed soil survey covers an area of 595 ha approximately.

Based upon this survey it was found that 42.81 ha consists of Good Arable Land (Land capability classes). There area about 88.38 ha of moderately Good Arable Land (Land capability classes C2 - S2). Maginal Arable Land constitute 45.00 ha poor Arable land (Land capabiliy classes - s3. Non- Arable soils make up the remaining 417.76ha (Land capability class G.W).

It is recommended that about ha (Land classes s1, c2, and s2) are well to moderately well suited to climatically adapted crops such as sorghum, maize, millet, groundnuts, cotton selected vegetables e.t.c.

The class 3 land of ha may have a flooding hazard and would need some drainage works before they could be safely used. The 34 soils have deep sandy textures and should not be used for arable cropping. They should be used for building site. The GW land, that makes up seasonally wet flood places, should best be used for rice growing or dry season grazing (if likely in this tsetse area).

INTRODUCTION.

As a result of the selection of an area by the Department of Agriculture and Africare Staff in June, 1980, a detailed soil survey was carried out in August to September, 1980.

Purpose of this survey was to investigate the soils and their extent where rice scheme be carried out under specific valley conditions.

The area is located in Eastern Pronvince, Chama District: Senior Chief Kambombo area about 28 Km due North of Chama Boma, along Chama - Nthonkho School road RD 691.

GENERAL DESCRIPTION OF THE AREA.

LOCATION:

The Survey area is located in Eastern Province, Chama District about 28 Km North of Chama Boma and about 1 Km West of Kapilingizya Village. Its approximate location is 33' 02" E 11' 03" South. It is bounded by Kombazi Stream to the West and North to the East is the cut line and to the South.

CLIMATE:

The Climate is tropical continental with a single rainy season from November to April, a dry cool season in May to July and temperatures gradually rising reaching a climax in September, October and November until the onset of the rains, no climatic data exist for Kapilingizya, but the nearest station Chama District, about 28 Km to the South has an average annual rainfall of about 900 mm. Frost do not occur and maximum temperatures may size as high as 38'c in October and November.

GEOLOGY RELIEF AND DRAINAGE:

The underlying rocks in the area believed to belong to the Karroo sediments that occupy large parts of the Luangwa valley floor. They consist of an alternating succession of sandstones, siltstones and mud-stones of very variable thickness. These are overlain by alluvial depo-stist of both the Luangwa and Luwembe Rivers.

The Survey area drains entirely towards the Luwembe Rivers. Topography is very flat. Some manor differences in elevation reflect series of ridges (old river levees) and depressions (former backswamps) of varying extent. The depressions are seasonally water logged, mainly by local rainfall and runoff. The lower ridges are subject to occa-sional flooding.

...../2.....

Department of Agriculture,
Mount Makulu Res.Station,
Private Bag 7,
CHILANGA.

9th January, 1981.

Mr. E. Lowther,
Resident Representative,
AFRICARE,
P.O. Box 33921
LUSAKA.

PRELIMINARY SOIL REPORT OF MA AIDE SCHEME.

Please find photostat copy of a brief handwritten report by Mr. Phiri on the hectarages for each of the soil units and my letter to him requesting the final report.

Also I am enclosing the soil analytical data as presently available.

Before commenting upon these I must state that I have never visited the areas and in the absence of the soil report my comments should be considered tentative. However, having worked in the Luangwa Valley on similar areas I would say the following:-

Chemically the soils are fertile and would respond to the application of fertilisers when cultivated. However, their physical properties may be somewhat problematic in that they can only be cultivated at Critical Soil moisture levels especially the very heavy clay soils. This because of the nature of the clay minerals which tend to be very hard when dry and very sticky and plastic when wet(high in montmorillonites). Soil structure should be moderate to strong and cause no major problems under continuous cultivations with machinary. From Mr. Phiri's report only mapping units 1w and 3tw would be suitable for rice cultivation provided their waterlevels would be sufficient. This would give for Chifunda 150ha, Simulemba 135ha and Mapilingiwya 417 ha.

I hope this information will be sufficient at this stage.

A. Commissaris
SENIOR SOIL SURVEYOR.

c.c. Mr. M.S. Phiri,
Ast.Soil Surveyor,
Box 89,
CHIPATA.

/kkm.

P.O. Box 33921
LUSAKA, ZAMBIA

RECEIVED JAN 21 1981

9 January 1981

Letter 160

Mr. T. Qaadir Madyun
Assistant Program Manager
Africare
1601 Connecticut Ave. NW
Washington, D. C. 20009
U. S. A.

Dear Qaadir:

Enclosed is the Chama soils analysis as provided by the Mt. Makulu Agricultural Research Station* It lacks maps, but includes the most essential information--the capability of the soil to support mechanization, fertility and relative areas of type soils available in the three areas. ~~Bob should review these~~. I trust ~~they~~ will be adequate for AID's purposes.

In discussing the analysis with the senior soils scientist at Mt. Makulu, I was referred to an interesting booklet published by FAO in Rome in 1965. Perhaps Africare has or can get a copy of "Dark Clay Soils of Tropical and Subtropical Regions." I read through it yesterday, on the soil scientist's recommendation, and quote some of the more relevant passages below. One thing the scientist mentioned that I would appreciate Bob's advice on: the importance of plowing heavy clay soils when they are at just the right moisture content, and the normally short period when this plowing can be done. How can we best determine this optimal plowing period in Chama?

The book estimated in 1965 that Zambia has 900,000 hectares of the dark clay soils in the Luangwa, Lukushashi and Zambezi valleys and in the Kafue Flats. It goes on to say:

"Owing to their high clay activity, these soils are difficult to cultivate, especially with simple implements, and as a result large areas have remained unused or have not been used efficiently." (This tends to support our decision to mechanize.)

"Despite their dark color, these soils are generally low in organic matter. . . . The low but sustained production obtained . . . without fertilizers demonstrates their stability under extensive use rather than a high degree of fertility. This stability may well be due to the so-called self-mulching which many of the soils show, i. e., upon cracking the surface soil is mixed into the subsoil and fresh material appears at the surface. This turnover replenishes the nutrient content of the upper layers and assures a more even distribution of organic matter."

Hope this is of help, and I look forward to Bob's comments.

Peace,

Kevin Lowther
Resident Representative

* Analysis sheets are in my file, but they appear too technical — lots of numbers, etc. — to be of any use to AID review process. Note the hectarage judged good for rice — more than we anticipated.

ANNEX E

AFRICARE

"Improving the quality of life in rural Africa through the development of water resources, increased food production and the delivery of health services."

1601 Connecticut Avenue, N.W. Washington, D.C. 20009
Telephone (202) 462-3614

March 4, 1981

Mr. Alfred Harding
Project Officer
Department of State
Room 2884
Agency for International Development
Washington, D.C. 20523

Dear Mr. Harding:

The following information is being provided in response to the questions that were raised during the official review of the Chama Rice Project proposal on 2/20/81.

RAINFALL DATA: The mean annual rainfall in the watershed that serves the project area is 40 inches, with a 20 percent variability. During the past three years, rainfall has been well above average.

According to data from the Zambia Meteorological Department for 1972-80, average rainfall was 886.76 mm at the Kambomba Agricultural Camp located near Kapilingizya with a low-high range of 616-1297 mm. The rainfall station located nearest to Simulemba (approximately 20 km away) recorded an average annual rainfall of 873 mm, with a low-high range of 754-1115 mm. No specific data is available for Chifunda.

Based on this data, Africare strongly believes that rainfall in the project area will be quite sufficient to support this rice production program. Further, in light of the fact that there have been no periods of excessively low or high accumulations of rainfall during the last nine years, and the fact that rainfall has been well above average during the past three years, we are convinced that water conditions in the project area will be most conducive to the success of this project.

Please find enclosed the revised Initial Environmental Examination Statement and a statement regarding the present rice cultivation techniques in the Chama District.

WAIVERS: Africare understands that the project is being provided with waivers allowing the procurement of the following items as budgeted, source and origin being free world LDC or developed countries other than the U.S.A.:

1) 2 four-wheel drive Landrovers: $35,000

2) 3 John Deere tractors/equipment/spares: $135,954

3) Caterpillar spares: $20,000

4) Up to 10 tons of seed rice from LDC outside of Zambia if needed: $10,000

Thank you for your assistance. We are available for any additional follow-up.

Sincerely,

Joseph C. Kennedy, Ph.D.
Director of International Development

JCK/qm:fy

Enclosures: as stated

Present Rice Cultivation Techniques
Chama District

Rice growing in the Chama District is traditionally done along the tributaries of the Luangwa River, on flood plains which benefit from the gradual rise of water during the rainy season.

Grassland selected for cultivation is hoed up into large circular mounds as much as eight feet in diameter, in such a way as to turn the grass into the center of the mounds where it is left to rot. A few cash crops may be grown on some of the first-made mounds, but the work of this initial season is little more than a preparation of the land for cropping. In the second year the weeds which have grown on the mounds are scraped down and left to rot between them and later, when the first rains have come, the mounds are pulled down and the soil containing the rotted grass is spread over the land.

Work on the land is done by hand, using flat-bladed hoes. The rice seed is either planted in small pockets dug in the soil or simply broadcasted over the land, at the beginning of the rainy season. Weeding is likewise done by hand, with no special implements. Because rice is not planted in rows, weeding is a difficult process and cannot be effectively accomplished.

Harvesting is accomplished using a small knife, and the rice stalks are gathered into bundles and later collected to a central spot for hand threshing.

The typical farmer is capable of planting, weeding and harvesting little more than a half hectare using the above methods. Hoe cultivation of the hard-baked fields is particularly difficult, and it is land preparation which is the principal limiting factor. Under the proposed Chama Rice Production Project, the introduction of tractor plowing is expected to increase the amount of land which each farmer will put under production, up to one hectare.

Appendix

Sunday Times of Zambia

July 20, 1980

CHAMA — THE DISTRICT THAT HAS NOT SEEN ANY DEVELOPMENT

PATCHES LWENJE

SEVENTY-FIVE-YEAR-OLD senior Chief Kambombo, Mr Kapalakonje Kapembe, has seen little development in his area since independence 16 years ago and, as a result, he has developed a biting sense of humour towards the subject in his Chama district in Eastern province.

"Development?" he asked in a voice laden with sarcasm. I don't know what you mean by that, and you are certainly not the first one to come in these big cars of yours and ask me about development.

"District governors, Members of Parliament and other politicians

development projects I want.

"Quite frankly, I think I am getting fed up. All they do is just sit where you are sitting and ask me questions and take notes the way you are doing — and nothing else."

Old Kambombo was putting the plight of Chama in such a light manner because he is a naturally jocular old fellow. The grim truth about the district is however no laughing matter as virtually everyone we talked to during a recent tour testified.

There is a deep feeling of desperation amongst the people of this vast valley covering a wide area of the long Muombo Valley of the mighty Luangwa River.

For the people of this land, famine is an ever-present spectre, the roads are bad and communications poor while bus services are erratic at the best of times and non-existent in many parts of the district.

For five or six months of each year, many parts of Chama district are cut off from the rest of the province — and the country — because vital bridges are washed away and the roads become impassable during the rainy season.

Little is ever done to correct the situation during the dry season.

In some of the remoter

sight of a motor vehicle and in many areas it was not strange to see children and elders alike running for their lives at the sight of our Land-Rover.

"These things are still unknown in some parts of this district," explained Chama boma chief messenger Mr John Zyambo who was our official guide on the district.

"And yet if our district was properly developed and opened up it has tremendous potential in any field you care to name."

The number one priority is without doubt the upgrading of the roads in the district.

Said the area's acting district secretary Mr Rexford Tembo: "There is no way the people of this area are going to take part in the food drive on a large scale if the conditions of the roads remain the way they are."

Indeed, the roads at present are such that some chiefs are cut off from the others even during the present dry season. For instance, it took us something like four hours to cover the bumpy 70 kilometres from Chama boma to Chief Chikwa's village.

Along this same route Mr Zyambo pointed out no less than ten major streams on which some pathetic attempts have been made by villagers to put up makeshift log bridges which cannot stand the torrential rains and floods which are a common

"When we attempted to proceed to Chief Chifunda's area along the same route a sickly Chief Chikwa wearily advised us to abandon the venture. "Even if you are using a Land-Rover, you will not get far on this road. Forget it."

A major road linking the boma to Chief Mutilo's area has been in bad shape for as long as anyone can remember and efforts by the locals to upgrade it on a self-help basis are floundering.

The Matumbo Road, a very strategic one as it links the district to nearby Chinsali only 56 kilometres away, can become an invaluable route for the area's awakening farming community if upgraded.

Last season thousands of Kwacha's worth of cotton went to waste in Chief Chiwale's area because it could not be collected. The road is constantly impassable and there is no bridge across the Lubundu River leading to the area.

Said Mr Ringston Banda, an agricultural assistant based at Chief Kambombo's village: "What is badly needed at Lubundu River is a permanent bridge or at least a pontoon. What people use now is an old canoe with a hole in it and it is very dangerous."

The problem of poor roads and lack of modern farming implements like tractors has had a very adverse effect on

potential to becoming the biggest rice producer in the country if the present rice growers there were better organised.

The rice growers in the valley have already demonstrated a remarkable ability to grow good crops using primitive implements.

Figures released by the Eastern Cooperative Union who handle virtually all the marketing for agricultural produce in the province show that last season Chama managed to produce 987 bags of rice.

Top Government officials are predicting that in other crops like tobacco, Chama may prove the leading producer in Eastern Province this year despite the poor conditions under which farmers work.

The big cry from farmers in the district is for tractors. Just now there is not a single tractor in the entire district and as a result, large-scale farming is impossible in the area even though people are willing to embark on it.

"No one can do much with hand cultivation," pointed out Mr Banda, the agricultural officer at Kamkwamba. "Name of the subsistence farmers here can manage to cultivate more than ten hectares and very few produce 30 to 40 bags of maize. It's mostly two or five bags a season."

Price

Indeed, in a district of nearly 40,000 people, the ECU last season only bought 655 bags of maize as compared with more than 100,000 bags in neighbouring Lundazi district.

Mr Banda explained that being a valley, the district has very rich soil and the grass grows very thick, adding: "Getting rid of that grass with your bare hands is not an easy task. Thus the need for tractors is imperative and I would suggest the Government allocate at least one for each of the chiefs in the area."

He said that sometimes 40 to 60 farmers apply for a tractor for hire each season but rarely ever get to seeing one. The last time they had a tractor was in 1976 and it broke down before it could do the rounds.

Complained chief Tembwe whose palace is about 40 kilometres from the boma: "If we had cattle, the problem of cultivating would not be so acute. But this is a tsetse fly infested valley and we cannot keep cattle. All we rely on are our bare hands and hoes.

But even the hoes are becoming increasingly difficult to obtain because suppliers cannot reach most areas. The result? When some businessman brings a few they sell at anything from K6 to K10 one.

As a matter of fact, exploitation of man by businessmen is the order of the day in Chama.

A tablet of Sabina bath soap that normally sells at 13n goes for 50n while Reward soap sells for K1, exercise books sell for 50n or above while sugar is sold in small cups for 30n a cup.

Waited group headman Chisasuni of Chief Tembwe's area: "Where can poor villagers like us with no ready sources of income get money for all these things? Even sewing needles are too expensive for us. Is this the independence they talk about?"

Chief Chikwa, whom we had to drag out of bed because he was down with malaria, launched a vehement attack on the local political leaders who he accused of "refusing to hear our pleas for essential services. I tell you, there are going to be mass deaths from starvation if help is not forthcoming.

"Half of every year, we are cut off from everybody else and when our roads become impassable, no relief supplies can come through.

"Yet when we ask for tractors to help us grow more food which we can store, all we get are empty promises. If they have no money we are all willing to contribute for a tractor."

At Katangalika and Ngamjo where the Government has this year introduced two major rice schemes involving local villagers, much progress could be achieved if they had proper farm implements like tractors and harvesters.

Right now all the 26

members of the Katangalika project and the 18 at Ngonye relying on hand cultivation. Said group headman Katangalika, Mr Joseph Goma who oversees the Katangalika scheme: "We just have to make do with the little we have — and it is not very much."

Chama farmers are also likely to make little headway in acquiring modern farming methods because, as already pointed out, six months of each year they are cut off from everyone else including the people with the know-how.

Another problem is that the district urgently needs more extension officers. For instance, Chief Kambombo's area alone has 60 villages spread over a wide area and is served by only one extension officer who has to make the rounds on a bicycle which cannot possibly take him to all the places.

The extension officer, Mr Banda, says that such a situation is likely to remain because there is a critical shortage of staff houses in the district. His own house is an old dilapidated affair which has never been serviced or seen a new coat of paint since it was built long before independence.

"Instead of spending huge sums building just one house for the senior people at the boma, the Government could use that money more wisely by at least repairing and improving some of our existing old homes which are falling apart," he said.

Another major problem for this problematic district is lack of adequate water supply. Chama is in the unusual position of having too much water during the wet season and very little during the dry season.

A number of water tanks, boreholes and wells sunk some years back in virtually all the chiefs' areas have either packed up or are defective in one way or another and do not function properly.

The people rely on water from streams which have a tendency of drying up during the hot season.

Chief Kambombo's village is an important district sub-centre which should have facilities like piped water and others, but it has none of these things and the old chief is very angry about it.

"Do they think I and my people are not worth piped water?" he fumed.

Perhaps an even more serious problem is the inadequate medical services. For years the chiefs and the area Member of Parliament, Mr Nephas Tembo, have raised alarm after alarm for a bigger district hospital and the putting up of new clinics all over the area but to no avail.

The small rural health centre at the boma is woefully inadequate and is always congested with patients sleeping three or more to a bed and on the floor. There is no doctor, no operating theatre and no X-ray and other vital things required at a normal hospital.

Admitted the assistant district secretary Mr Tembo: "The situation concerning health services is quite serious. What we need is a proper district hospital with a doctor, but, unhappily, there are no plans for such a project in the Third National Development Plan."

The ten clinics dotted throughout the district are definitely not adequate and many seriously ill patients still rely on the Lundazi district hospital which is itself totally inadequate.

Since the roads become impassable during the wet season, this actually means that patients needing urgent treatment during the rains fail to get to the Lundazi or Chipata hospitals and die.

The condition of the roads also makes it difficult to supply drugs to the district's clinics. Said Mr William Lweendo, a health assistant at the four-bed Chikwa clinic: "As a result of all these problems, the death rate is rather high and there is nothing we can do about it."

The people of Chama may be happy to learn, however, that the Government is at last thinking of doing something about the roads first and other things later. Mr Tembo said K50,000 is to be set aside for the main valley road covering Chikwa, Tembwe and Chifunda during 1981.

This road leads up to Lundazi and if tarred can bring a lot of progress to Chama. The road that is in common use in the district now passes through Malawi and as such, State firms like ZCBC or banks are unwilling to set up camp there.

Other private businessmen must also be feeling somewhat unenthusiastic about putting up businesses at the boma. There are hardly any shops there and only one bar run by the rural council provides excitement of any kind, that is, if you are lucky to find any beer at all.

The lack of rapid development for the area is blamed on what local officials say is the fact that Chama is a very new district, born with independence, and that it is still "organising" itself.

A major source of pride for Chama officials is the beautiful new 11-room council rest house which, indeed, is just about the best rest house in the province.

But it too has yet to "shine".

There is still no electricity in Chama — and no candles.

CHAMA RICE PRODUCTION PROJECT
AGRICULTURAL ENGINEER/MECHANIC SPECIALIST

JOB DESCRIPTION

I. BACKGROUND

A. Agricultural engineer or equivalent with approximately 10 years of experience and training in agricultural engineering/mechanics:

1. Thoroughly familiar with use and maintenance of farm equipment, particularly tractors;

2. Capable of training drivers and mechanics in all phases of operations and repair.

B. Previous experience in rural Africa is essential.

C. Demonstrated ability to learn a new language; possesses cultural adaptability, etc.

D. Should have substantial experience in supervision and management of field activities in remote rural areas.

E. Should have experience in supervising equipment operators, surveyors, and engineers in rural road/bridge construction activity.

F. Experience in community development is very desirable.

G. Preferably single or if married, without children.

1. If married, wife must be strong and should have a useful skill.

II. DUTIES

A. Train and supervise farmers in the use and maintenance of tractors, farm machinery and equipment.

B. Work with a counterpart and ensure that he is properly trained and possesses the necessary skills to work with farmers in the operation and maintenance of their equipment.

C. Set up a system for ordering, stocking, testing and maintaining the manually operated equipment, such as weeders and planters.

D. Participate and collaborate with public workers and local officials on the road rehabilitation effort for the project.

E. Be responsible for identifying commodities needed for infrastructural development, such as wells, clinics, farm to market roads, grain storage, silos, etc.

F. Will report to the Rice Coordinator.

CHAMA RICE PRODUCTION/ZAMBIA - EVALUATION BENCHMARKS

The Chama Rice Production Project will be evaluated against the Logical Framework presented as part of the Africare Project Paper, using the following as benchmarks for intermediate evaluations to be conducted at the end of the first and second growing seasons:

First Evaluation Report (around July/August 1982)

1. Rice Coordinator and all extension staff (3 agricultural assistants and 3 commodity demonstrators) in place and working in support of the project.

2. Africare Agricultural Specialist in place, with working knowledge of local language, supporting project.

3. District Management Committee and 3 Farmer Management Committees organized and functionning.

4. Three tractors on site and supporting mechanized farming needs.

5. Minimum of 3 tractor drivers trained.

6. Caterpillar road grader repaired and functionning.

7. Housing construction initiated.

8. Road improvements underway on Chipamba-Simulemba Road.

9. Minimum of 3 seed demonstration plots begun.

10. Minimum of 3 seed farmers producing seed rice.

11. Number of participating farmers increased by 10% (from 500 at beginning of project, to 550 by end of first harvest).

12. Number of hectares under cultivation increased by 10% (from 250 at beginning, to 275 by end of first harvest).

13. Yields per hectare increased by 25% (from 16 bags/hectare at beginning, to 20 by end of first harvest).

Second Evaluation Report (around July/August 1983)

1. Housing constuction completed (3 type-203 houses, 2 type-321 houses, 3 pole and dagga houses).

2. Road improvements completed on 25-30 kilometers of rural roads.

3. Minimum of 6 seed demonstration plots established.

4. Minimum of 6 farmers producing seed rice.

(Second Year Evaluation cont'd)

5. Number of participating farmers increased to 600 (20% over those at star of project)

6. Number of hectares under cultivation increased to 437 (75% over the 250 at the start of the project).

7. Yields per hectare increased to 25 bags per hectare (as opposed to 16 bags per hectare at start of project).

Third Evaluation Report (around July/August 1984)

See Logical Framework, which provides expected outputs at end of project.

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In addition to the above, it is expected that the project will help farmers in the project area to increase their incomes. The expected increases in income, however, are tied to assumptions about increases in the official price for rice (see project document, page 6). If the price goes up as expected, and the above increases in participating farmers, total hectares and yields per hectare are realized, then it is expected that gross income from sales of rice will be approximately as follows:

a. First Growing Season - $81,893 on 275 hectares
b. Second Growing Season - $230,326 on 437 hectares
c. Third Growing Season - $316,071 on 450 hectares

The analysis behind these estimates is set forth in further detail in Table II, page 7, of the Africare Project Paper. It should be pointed out that these projections are based on increases in the official selling price, and certain assumtions about the quantity of rice which farmers will keep as opposed to sell, and the overall results must be evaluated within this framework. Obviously, there are certain factors which will be outside of the control of the project, and an understanding of these is important in terms of income projections.